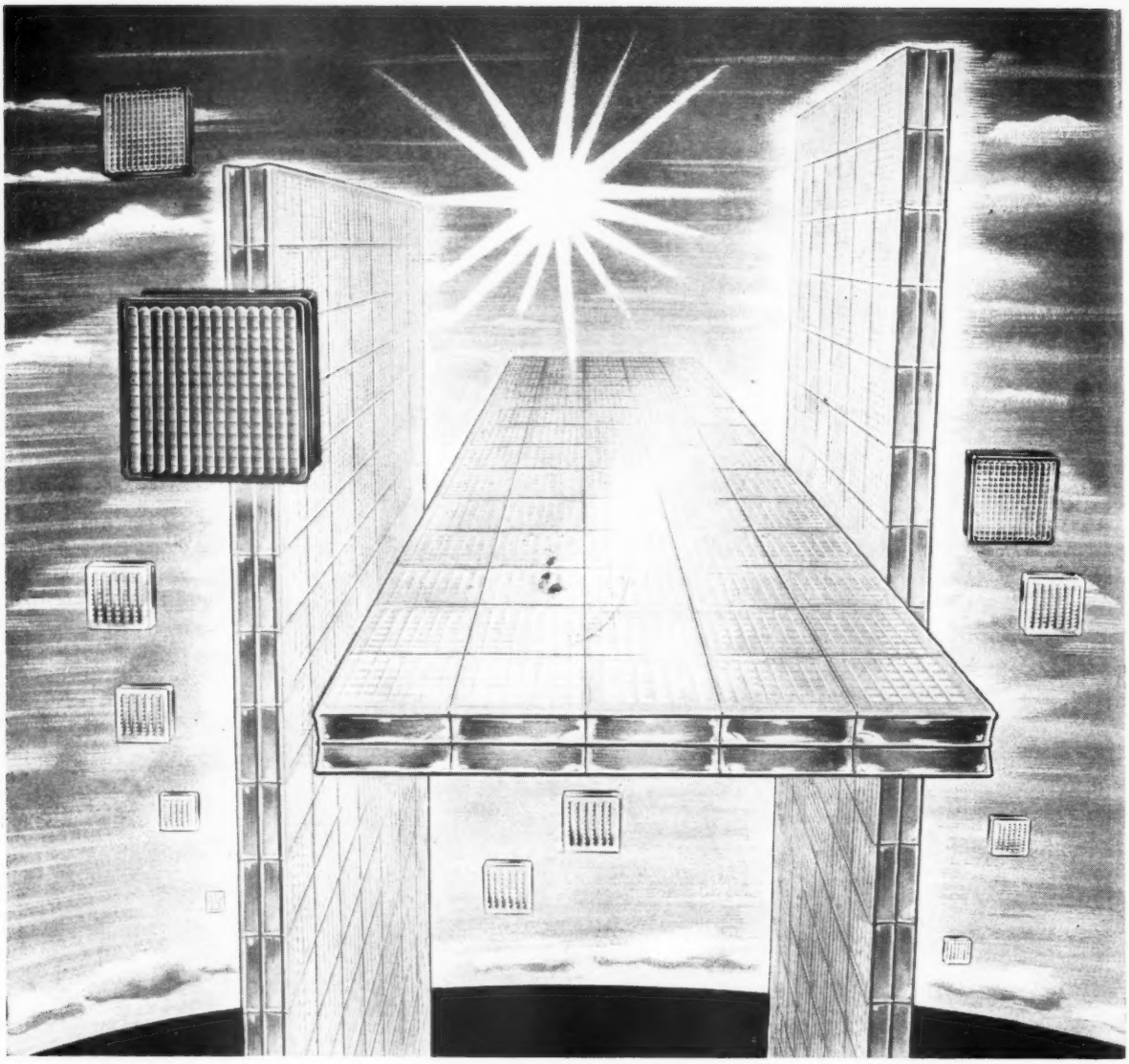
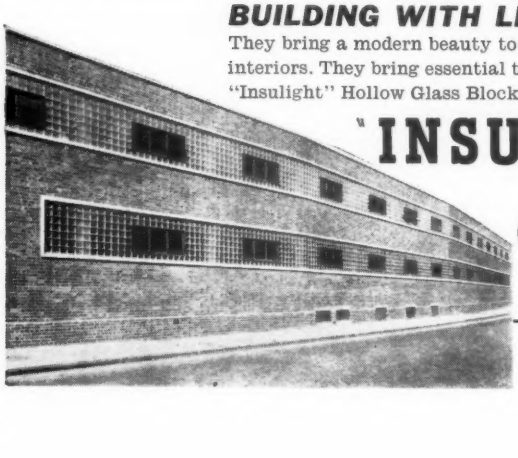
THIRD SERIES VOL 63 NUMBER 11 SEPTEMBER 1956

66 PORTLAND PLACE LONDON W1 · TWO SHILLINGS AND SIXPENCE

Mile High Center, Denver, Colorado. Architects: I. M. Pei and Associates Kahn and Jacobs, and G. Meredith Musick *Ezra Stoller*





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THE JOURNAL OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS

THIRD SERIES VOLUME SIXTY-THREE NUMBER ELEVEN TWO SHILLINGS AND SIXPENCE
66 PORTLAND PLACE LONDON W1 TELEPHONE LANGHAM 5721–7 TELEGRAMS: RIBAZO WESDO LONDON

SEPTEMBER 1956

Tax Concessions for Pension Provision

Important income tax concessions are included in the recent Finance Act 1956 to enable self-employed professional men and others to provide pensions for retirement. Subject to certain conditions and limits, premiums in respect of a particular form of deferred annuity will rank as a charge upon income for both income tax and surtax.

The A.B.S. Insurance Agency Ltd. has made arrangements with several of the leading life offices undertaking this business, and can offer advice as to the most advantageous plan in the particular circumstances of the individual enquirer who contemplates taking advantage of these income tax concessions.

An experienced official, Mr. E. D. Kinnish, has been appointed to deal with this work, and is available at 78, Wimpole Street, W.1 (WELbeck 1526), to meet enquirers by appointment, or deal with correspondence regarding pensions or any other of the wide range of insurance facilities available. The funds of the Architects' Benevolent Society benefit where insurance business of any kind is dealt with through the A.B.S. Insurance Agency Ltd.

A.B.S. Benefit from Exhibition

As a result of the exhibition of pictures by Mr. E. B. Musman [*F*] and Mrs. P. Johnstone at Parsons' Grosvenor Galleries in April, the A.B.S. has benefited by the handsome sum of over £75, which includes £9 10*s*. from collection boxes and a donation of 5 guineas from Messrs. George Wright (London) Ltd.

The artists are to be congratulated both on the success of their exhibition and their generosity to the Society.

We understand that Mr. Musman proposes to hang one or two of his pictures on the walls of a new public-house he has designed. The subjects are appropriate, one being an interior of a delightful old pub and the other an old brewer's man seated on a barrel.

D.S.I.R. Appointments

Dr. H. W. Melville, F.R.S., took up his appointment as Secretary of the Department of Scientific and Industrial Research on 27 August in succession to Sir Ben Lockspeiser.

Dr. G. B. B. M. Sutherland, F.R.S., who succeeds Sir Edward Bullard as Director of the National Physical Laboratory, took up his new post on 14 September.

Mr. W. Godfrey Allen to Retire

At the end of the year Mr. W. Godfrey Allen, F.S.A. [*F*], is to retire from the Surveyorship to the Fabric of St. Paul's Cathedral, a post he has held so honourably for the last 25 years. He will return to private practice which will include the restoration of the Sheldonian Theatre, Oxford, and will take with him the JOURNAL's best wishes for a period free from drama and anxiety.

Mr. Godfrey Allen's term of office has been no sinecure, for a dangerous structure notice was served on the cathedral at one time.

When he joined the office of the late Sir Mervyn Macartney, the then Surveyor, Mr. Allen acted as secretary to the St. Paul's Commission, set up to investigate the condition of the fabric. He was appointed resident architect to the Works Committee in 1924 and Surveyor to the Fabric in 1931 when he initiated an examination of the subsoil conditions affecting the Cathedral's foundations, which had been causing considerable anxiety. As a result the St. Paul's Preservation Act was passed, giving powers to restrict underground operations in the vicinity of the cathedral, which will certainly have a bearing on the erection of high blocks in the neighbourhood in the near future. Mr. Allen also took steps to protect views of the Cathedral from obstruction by new buildings.

The culmination of dangers came with the 'blitz', when the survival of St. Paul's was identified widely with the spirit of London. Mr. Allen faced this new threat at the head of the famous St. Paul's Watch, whose magnificent work has already been recorded in the JOURNAL (December 1948). Since then he has designed jointly with Mr. Dykes Bower, F.S.A. [*F*], the new High Altar and the American Forces Memorial Chapel.

Mr. Allen's successor is to be Lord Mottistone [*F*], who with his partner Mr. Paul Paget [*L*] has had wide experience in this field, including war damage repair and reconstruction of the palaces of Lambeth and Fulham.

A.B.S. Ball

As has already been announced, the A.B.S. Ball will be held at Grosvenor House on Wednesday 12 December, thus reverting to a day of the week that is more popular with members than Thursday. Tickets will be available early in October and an order form will be inserted in the October JOURNAL.

Arrangements for the Session 1956–57

What promises to be a very interesting and topical programme of Ordinary General Meetings and lectures opens on 6 November with the President's Inaugural Address. During the evening Mr. Frederick Gibberd, C.B.E. [*F*], will be presented with the London Architecture Bronze Medal and the portrait of Mr. C. H. Aslin, C.B.E., Past President, will be unveiled. It was painted by Mr. Allan Gwynne-Jones, D.S.O., A.R.A.

On 11 December the first Sessional Paper on 'The Motor Vehicle in Civic Design' will be by Prof. H. Myles Wright [*F*] who occupies the Chair of Civic Design in Liverpool University. It can be expected that Professor Wright will not attack this tough problem without effect, and the discussion should be stimulating.

Coming to the New Year, on 8 January, following the Announcement of Awards of Prizes and Studentships, Mr. Reyner Banham will give an illustrated paper on 'Futurism and Modern Architecture'. Mr. Banham, who has been Assistant Editor (Literary) with the Architectural Press since 1952, was trained as an aeronautical engineer. He describes himself as a car-fancier and contributed a poem to the remarkable catalogue of the 'This is Tomorrow' exhibition at the Whitechapel Art Gallery. This is an evening that should separate the men from the boys.

On 5 February the President, Mr. Kenneth Cross [*F*], will deliver his Address to Students, after which the critic, Sir Hugh Casson [*F*], will give what will certainly be memorable comments on the work submitted. The Presentation of Prizes follows.

On 12 February there will be the second science lecture on Drawing Office Technique. (The first was held on 17 January last.) This will take the form of a symposium on the Relation and Form of Drawings, Specifications and Bills of Quantities.

On 5 March, Mr. G. A. Jellicoe, M.T.P.I., P.P.I.L.A. [*F*], will give an illustrated paper on 'Building in the Landscape'. Such is Mr. Jellicoe's expertise that in the 18th century he would surely have been known as 'Landscape' Jellicoe.

On 9 April The Presentation of the Royal Gold Medal will take place.

On 16 April there will be a science lecture, a symposium on 'The Structural Uses of Timber in Building'.

On 7 May the Annual General Meeting will be held.

On 21 May Mr. John Summerson, C.B.E., F.S.A. [*A*], will give a paper on 'The Case for a Theory of Modern Architecture'. In view of his brilliant introduction to the catalogue of the Arts Council Exhibition of Post-War Architecture, of 1955, it will be most interesting to see if Mr. Summerson can consolidate his position to the satisfaction of the younger members.

On 18 June the results of the Council Election will be announced. This will be followed by a debate on 'System of Proportion', a topic of perennial fascination for architects at which it is likely that speakers will run out of time.

The British Architects' Conference 1957 will be held at Oxford from 10 to 13 July. This is rather later in the year than usual since the Conference must take place during the University Long Vacation.

Michael Ventris

As we go to press we learn of the death of Mr. Michael Ventris, O.B.E. [*A*], at the age of 34, in a car accident on 6 September. This tragedy will deprive members of what would undoubtedly have been a valuable science lecture on 'Information for the Architect.'

Mr. Ventris will be remembered for his outstanding contribution to the deciphering of the 'Linear B' language, described in his article 'Greek Records in the Minoan Script'. He was awarded the ARCHITECTS' JOURNAL Research Fellowship in 1955: and was to have described the results of his work in this field in a paper to be read at the R.I.B.A. on 19 February. His death is a serious loss to both architecture and archaeology.

Full-Scale Trials of the Results of Research Work

Arrangements exist between the Building Research Station and the National Federation of Building Trades Employers whereby members of the Federation will be willing to use for contracts the results of the Station's research work. In recording the agreement it was emphasised that the results so tested were only those which had proved successful in all the laboratory work conducted by the Station and also in such limited full-scale trials as the Station was normally able to conduct. They are therefore experimental not so much in the sense of their practicability being tested as in the process of trying out the best methods of application and the relative economics.

The greater the extent of such full-scale trials, the more rapidly can a body of information on techniques and applications be collected, and it is therefore to the advantage of the building industry as a whole in the long run to transfer these new processes from laboratory to building site at the earliest feasible moment.

The building owner must however have the final say in such matters, since he is the one who pays for the job. The architect's duty is therefore clear. He must as far as possible safeguard the building owner's interests, but on the longer view he will assist building owners generally by helping to develop new and more economic processes.

There have been reports of the reluctance of some architects to consider any such full-scale trials on the jobs for which they are responsible and the whole matter has recently been considered by the Executive Committee of the Council. It is their view that within the limits of responsibility for the interests of their clients, members should co-operate in trying out the results of the Station's research and should do all in their power to see that information on such trials is disseminated through the profession.

New Barbican Scheme Appeal Decision

In his letter of 28 August to the Lord Mayor of London the Right Hon. Duncan Sandys, M.P., Minister of Town and Country Planning, said that he had been greatly impressed by the imaginative scheme put forward by the New Barbican Committee. They were to be congratulated on the boldness and originality of their conception, which would give a much-needed stimulus to fresh thinking about the nature of future development in the City.

The widespread interest evoked by the proposals had most effectively focused attention on the need for replanning this important area in a comprehensive manner.

Mr. Sandys gave as the grounds for rejecting the scheme that it would appreciably increase the congestion of Central London.

In expressing his interest in the City Corporation's own plans for the area, the Minister said he was convinced there would be advantage in creating in the City a residential neighbourhood even if it meant forgoing a more remunerative return on the land.

Elemental Bills of Quantities Discussion

At this year's Conference at Norwich great interest was shown in the subject of elemental bills of quantities and cost analysis. Members may obtain tickets for free admission to a discussion at the Building Centre at 6.30 p.m. on 24 October from the Technical Information Service of the Ministry of Works.

The discussion has been arranged in association with the Service by the L.C.C. Brixton School of Building. Sir Thomas Bennett, K.B.E. [*F*], is expected to take the chair and speakers will include Mr. Peter Trench, O.B.E., Mr. J. N. Nisbet, Chief Quantity Surveyor, Ministry of Education, and Mr. F. G. West [*A*], Deputy Architect, L.C.C.

R.I.B.A. Diary

MONDAY 8 OCTOBER. 6 p.m. Library Group Meeting. Talk on the engravings of the 'Cabinet du Roi' by Mr. J. C. Palmes, Librarian.

General view showing detached bell-tower linked by covered way to the narthex

The University Chapel, Ibadan, Nigeria

Architect: G. G. Pace, F.S.A. [*F*]

IBADAN was chosen as a site for the University by the Elliott Commission in 1943. The site extends over 2,500 acres and was mostly covered with thick bush when work started on the building of the University in 1950. The majority of the University buildings have been designed by Maxwell Fry and Jane Drew [*FF*]. The University was formally opened in November 1952 and up till then had cost about £2,000,000.

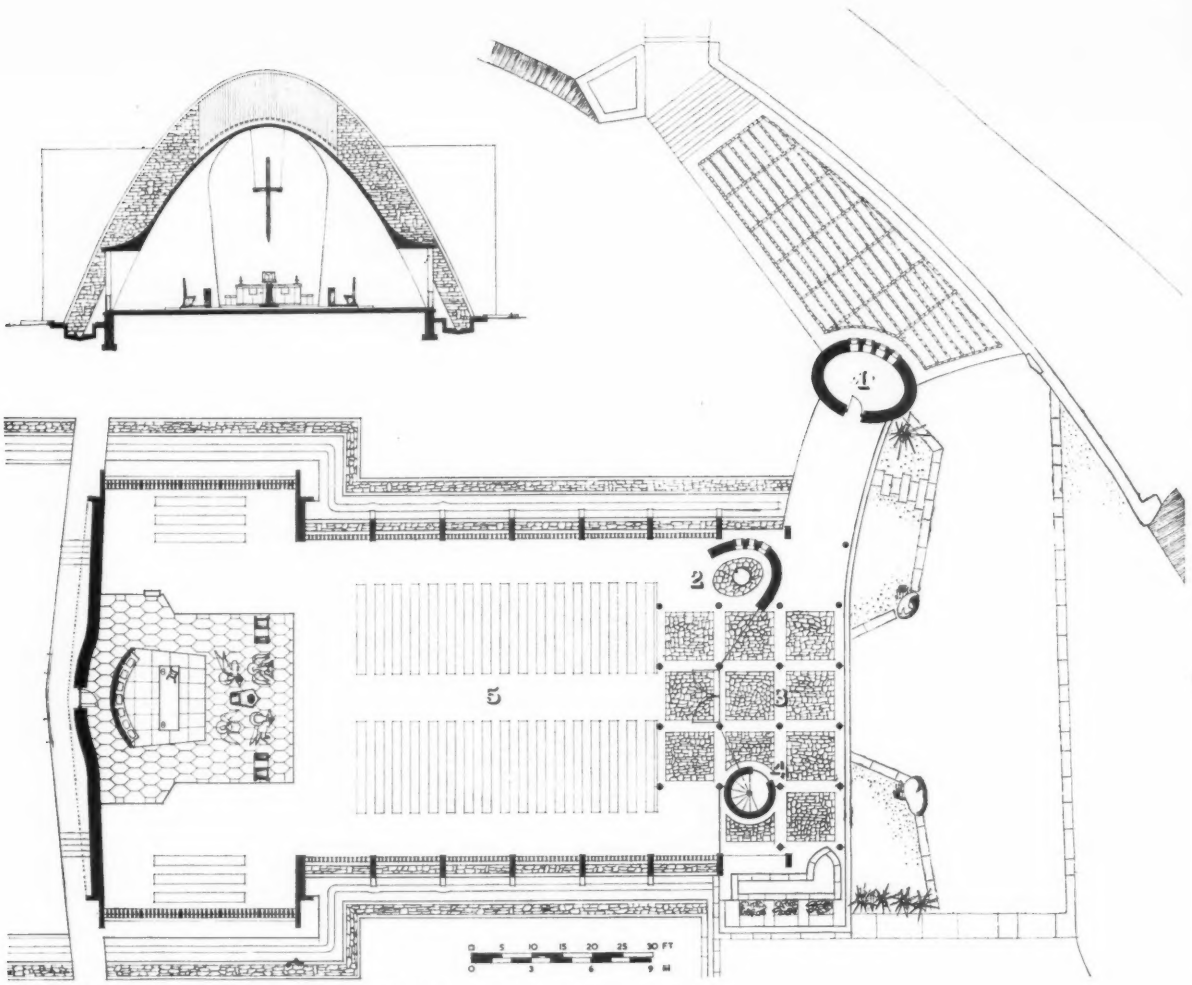
The official building programme did not include the provision of chapels. Three places of worship are proposed: the University chapel will be used by all denominations except Roman Catholics, who are to have a chapel of their own, and for the Muslims a mosque is proposed. The Roman Catholic chapel has been built and the mosque has been designed, in both instances the architects being Maxwell Fry and Jane Drew.

The University chapel—The Chapel of the Resurrection—has been built from funds provided by the Christian Council of Nigeria, a grant from University funds and donations from firms and individuals. The maintenance of the chapel is to be undertaken by the University College.

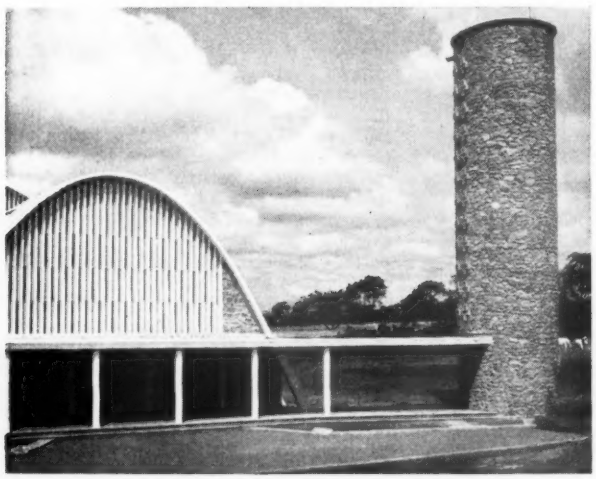
The chapel was designed in 1951, work started in 1953 and the consecration took place in November 1954.

The site of the Chapel of the Resurrection is some distance from the main buildings of the University. The layout of the site has been very carefully considered. At the nearest point to the University an artificial mound has been formed upon which stands a 20 ft. high concrete cross. The whole of the chapel site has been grassed. The greater part is to be cut once a week and certain areas daily, and the contrast between the different textures thus forms an abstract pattern on the ground. Between the University buildings and the chapel is a grove of casuarina trees some 700 ft. long in the form of a cross. In a few years this symbol will be visible from aircraft flying on one of the many routes which pass over the site. The site immediately adjacent to the chapel has been laid out in a more intimate fashion and forms one with the design of the chapel.

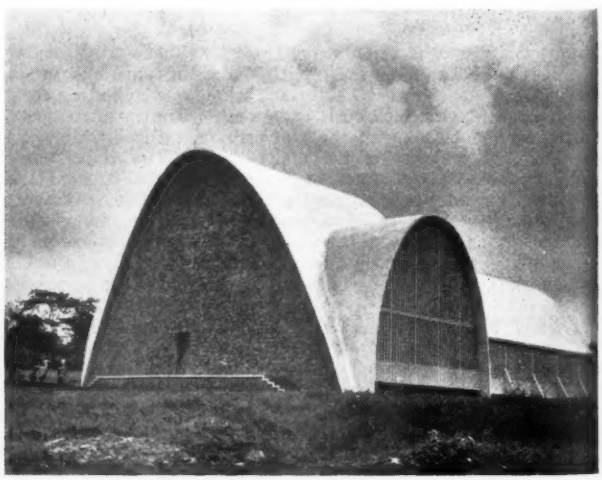
The chapel consists of a detached bell tower in the base of which is the vestry. A covered way links the tower with an extensive narthex. The roof slab of the narthex projects into the chapel proper and forms a gallery in which the choir sit, and in which ultimately an organ will be placed. The gallery is approached from the narthex by means of a spiral staircase. In an enclosed portion of the narthex a small baptistry is formed. The nave has permanent seats for 400, but on special occasions the seating of the chapel can be increased to 800 and the narthex can also be used for this purpose. The chancel is arranged with quasi-transepts so that the chapel may easily be extended when more



Key: 1, Tower and vestry. 2, Baptistry. 3, Narthex. 4, Stairs to gallery. 5, Chapel

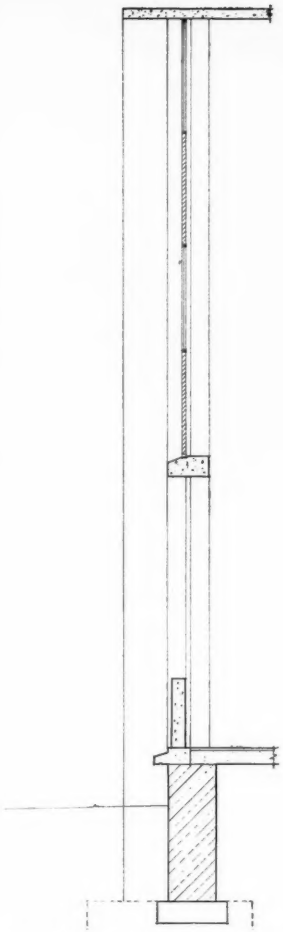


The bell-tower, which is oval on plan, is of granite rubble

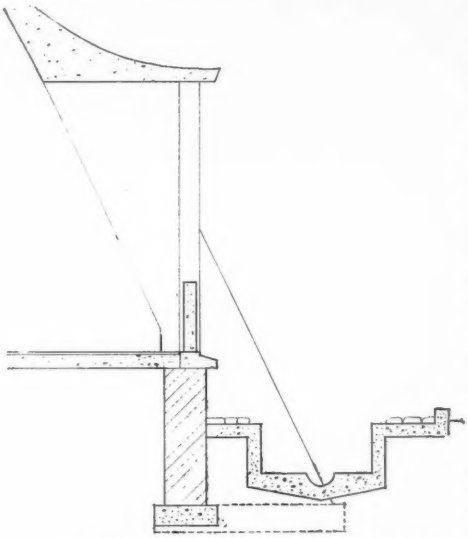


The r.c. shell roof is approximately 4 in. thick with infilling of local granite rubble

In the foreground is the 20 ft. high concrete cross

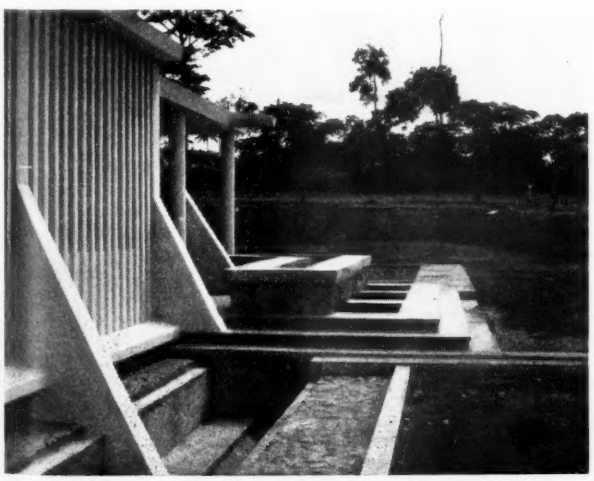


Section through transept walls. The upper part is in alternate louvres and glass

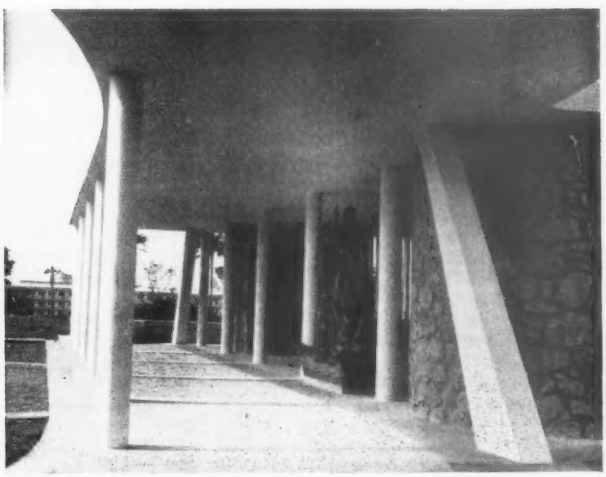


Section through side walls of nave showing provision for rainfall

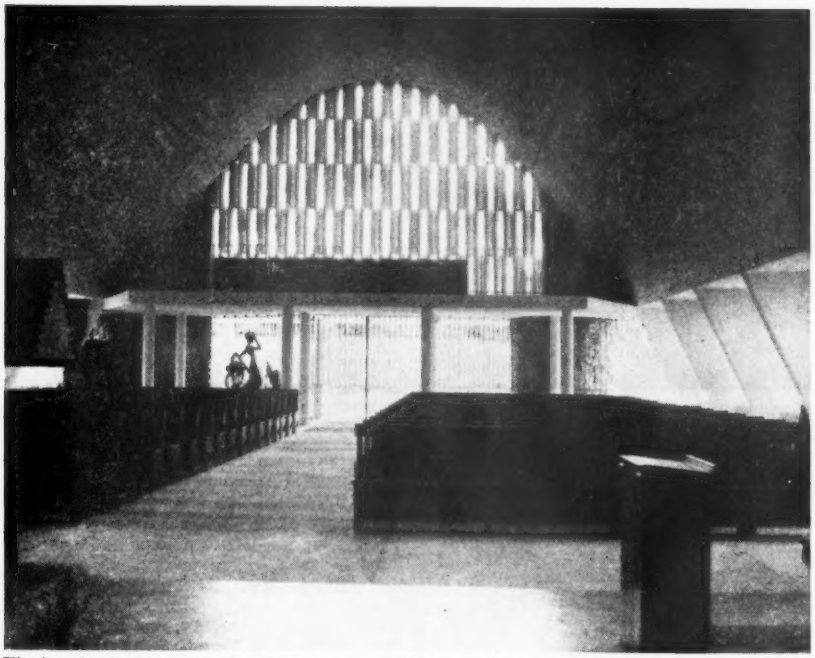
seating accommodation is required as the University grows. The altar is free-standing. In front of it is a large area raised one step from the rest of the chapel. In the centre of this is placed the lectern and on the floor round it are emblems of the four Evangelists executed in crushed coloured sea shells polished. At the outer corners of the platform stand two priests' stalls. The priests' stalls and lectern are removable so that the platform may be used for religious drama. Those taking part in plays are able to enter the chancel by a door which is behind the parabolic reredos. At the foot of the parabolic reredos is a continuous seat. This, together with the other furnishings in the chancel, has been so designed that the chapel may be used by the many denominations which are joined together in the Christian Council of Nigeria. The parabolic reredos, which is constructed in reinforced concrete, also plays a vital rôle in the acoustics of the chapel. In the quasi-transepts a certain number of pews are placed. These enable the congregation to sit on three sides of the altar table during celebrations of Holy Communion.



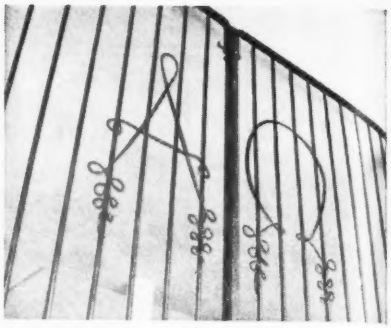
The side wall of the nave with open grille for ventilation

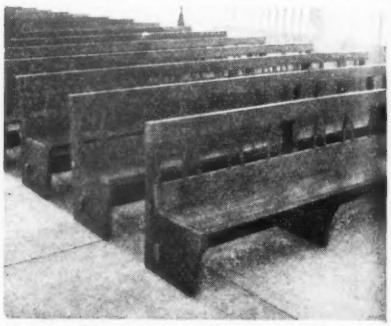


The narthex showing Resurrection group in iroko carved by Ben Enwonwu

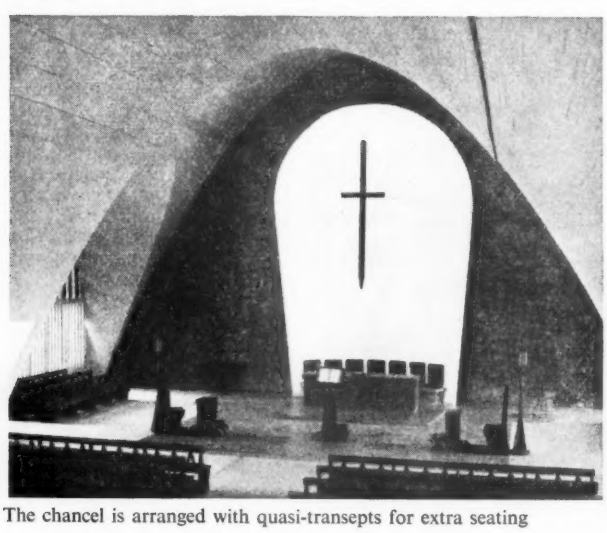


The interior looking towards gallery over roof-slab of narthex. The Resurrection group shows up in silhouette in the background

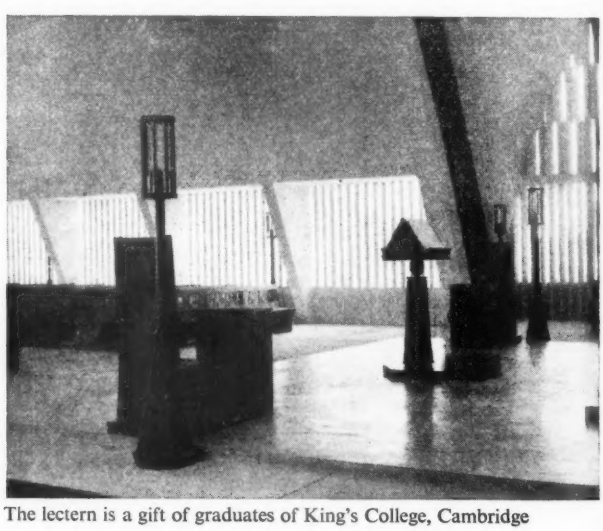




Detail of ironwork, and pews which are in iroko



The chancel is arranged with quasi-transepts for extra seating



The lectern is a gift of graduates of King's College, Cambridge

The parabolic shells which form the main structure of the chapel are of reinforced concrete and approximately 4 in. thick. The columns of the narthex and the roof and gallery over are also reinforced concrete. Where infilling is required in the chapel structure this is formed of local granite rubble. The sides of the chapel are filled with precast concrete grilles which enable the prevailing wind to blow through the chapel. Other openings are partly glazed and partly filled with louvres. Special provision has been made to take away the heavy rainfall from the shell vaults and other roofs. The tower is built entirely of rubble granite and since it was impracticable to work these stones the plan is oval so as to avoid quoins. Precast concrete wind and sound holes are built into the rubble wall.

In the narthex stands the Resurrection group which has been carved in iroko wood by the Nigerian sculptor, Ben Enwonwu, working in the closest harmony with the architect. The pews, lectern, priests' stalls and the standard light fittings are of iroko wood and were all made by the general contractor. The lectern is a gift of graduates of King's College, Cambridge, who are connected with Nigeria, and carries two Bibles presented by the Provost and Fellows of that College in memory of Provost Thackery.

The cost of the scheme inclusive of furniture and the layout of the site is approximately £30,000.

The chapel was designed by George G. Pace, F.S.A. [*F*]. The consultants for reinforced concrete were Messrs. Ove Arup & Partners, the consultant for acoustics Mr. D. T. E. Jennings [*A*], quantity surveyors Messrs. Thompson & Alexander, F/F.R.I.C.S. The general contractors were Messrs. G. Cappa Ltd., Lagos and Ibadan.

High Density Housing Schemes in Europe—I

By R. A. Jensen, B.Arch., A.M.T.P.I. [*F*]

A shortened version of the R.I.B.A. Rose Shipman Studentship, 1954

THE ROSE SHIPMAN REPORT for 1954 deals with the subject of high density housing schemes in Europe, and although the travel involved was undertaken in the autumn of that year, research on this subject commenced some three to four years earlier. In consequence of the very considerable volume of material which was obtained in the various countries visited, the compilation of the Report was not completed until December 1955. Currently a great deal more factual information is being sought and the Report will, in due course, be amplified and added to in the form of a thesis.

Five years ago it was becoming evident that the subject of housing densities in central urban areas was one which required urgent reconsideration. Since then the serious overspill problems of the many cities and towns in this country, together with slum clearance implications in the near future, make it even more urgently necessary than ever to reach a decision as to whether there is any sound, practical and realistic alternative to population 'overflow' from the towns; with all that this implies.

If it can be accepted as fact that a number of other European countries have achieved a considerable measure of success in providing a high standard of flat life at higher densities than that at present permitted here, is it not reasonable to assume that further developments of this type should be actively pursued? Can we, in fact, for all the wide variety of reasons which have been so fully stated many times, afford not to build more compactly and more intensively whilst at the same time preserving the good housing standards and achieving results at a very much smaller capital outlay on the whole undertaking than would be the case with overspill schemes?

The recent correspondence in THE TIMES which arose from an analysis by Mrs. Glass, the well-known demographer, of the census information relating to travel in and out of central London has lent particular point and emphasis to this serious problem, and shows the desirability once again of re-assessing the whole basis of the decentralisation policy. Whether or not some overspill continues as unavoidable, there can surely remain little doubt that the problem can be greatly eased by resort to the type of planning referred to in this Report.

The Report itself, as has been explained, was deliberately constructed in the form of a survey over the widest possible field, with a primary object of indicating clearly ascertainable trends. In some instances, further detailed information is necessary for a full appreciation of some of the schemes referred to. Notwithstanding this, the volume and scope of the Report are such that with limitations of space it has only been possible for the JOURNAL to publish extracts from the full Report in this and in the next issue. These extracts have been selected so as to give the best possible picture of the scope of the Report as a whole, but the full text is, of course, available in the R.I.B.A. Library.

In some instances references to illustrations are contained in the text, but again it has not been possible, for reasons of space, to include more than a few of these. The more important and representative illustrations and plans of some of the most interesting schemes have been chosen.

FRANCE

With regard to density, many of the buildings inspected were parts of larger development schemes and for that reason it was somewhat difficult to obtain precise figures. Where however such buildings demonstrated the normal characteristics of high density development with concentrated planning, these were considered worthy of investigation. This principle was in fact followed not only in connection with the schemes in France but also in all other countries visited.

Details with regard to cost in schemes as a whole are, in many cases, as yet incomplete, but where details are available these have been included. On the general question of cost however it is of importance to emphasise that there is complete unanimity in every other country in Europe that, where all factors are taken into account, the overall cost of planning flats in high buildings is no greater than that of small houses. The factors of course which must be included, quite apart from construction costs, have been broadly described as Town Planning costs, by which is meant all the ancillaries apart from the construction itself, such as roads, services, the establishment of various new communal facilities, and, it might even be argued, the cost of reclamation or recovery of compensatory areas of land for agricultural purposes. It is also necessary to bear in mind that the majority of the high-density schemes embody the provision of central heating and hot water, which is then supplied for an inclusive rent; whereas in the small house scheme this would normally not be the case.

It was not always easy to obtain factual evidence of this general basis of comparison in connection with particular schemes, and even where costs are available comparisons with the accepted criteria used in this country are frequently difficult owing to differences in money values and methods of calculation of cubic content and superficial floor areas; and a great deal more investigation on this specific point is being undertaken. Nevertheless, in spite of these reservations, the general picture is quite clear and applies in France just as much as elsewhere.

Boulogne. It was a pleasant augury to find that Boulogne was busily redeveloping the area close to the docks which had been partly devastated by bombing, and that this development was taking the shape, in part, of 12-storey tower blocks, four of which were grouped on one site. These were constructed, as was found later to be the case with the majority of high buildings in France, with an in-situ concrete frame and the two lower floors, which were of a greater storey height than the typical floor, were intended for shops and offices. The accommodation consisted of 1- and 3-bedroom flats with staircase access and a central corridor. The blocks were sited in a position in which the tenants had the advantage of a wonderful view over the Channel, and this alone justified the use of the tall block on this particular part of the scheme.

The ubiquitous tower crane was in use on this scheme as in so many other schemes seen in various parts of Europe.

Le Havre. The Royal Institute of British Architects Gold Medallist, architect Perret, who died in 1954, was in general supervision of this work, and although the technique of construction was rapid and effective, utilising Perret's well-known precasting techniques, the lines of some of the buildings are rather angular and hard in appearance according to our own ideas.

All buildings in the area were constructed on piled foundations, with an in-situ concrete frame and brick or precast concrete slab cladding. Balconies are provided to all flats, which are equipped to a high standard and include central heating with the warmed air system.

Amiens. Perret's 28-storey tower block was the principal reason for the visit including Amiens. This has been erected more as a municipal focus than the solution to a specific housing problem, close to the main railway station and at the principal cross-roads in the town. Its technique of construction was similar to that of the buildings at Le Havre, with an extremely high standard of reinforced concrete work utilising both bush-hammering and exposed aggregates for the finish to external precast panels. At the time of the visit the building was incomplete, whether or not therefore the accommodation in the tower will prove popular is not yet known. An illustration of this building shows the great contrast

created by the height of the block with the surrounding buildings, which in this instance is not entirely satisfactory, owing to the rather pencil-like character of the design. A more robust-shaped block with adjoining buildings at intermediate heights might have been more satisfactory.

Rouen. This city was also very seriously damaged during the war, but again advantage is taken of these conditions and in the extensive clearance thereby rendered necessary with imaginative re-planning. The area adjoining the Cathedral on the right bank where damage was extensive is being completely rebuilt with fine blocks of flats, shops and the Chamber of Commerce, which form an impressive grouping. These flats were however mainly intended for middle-rent lettings and were not examined in any detail. On the opposite side of the river, in an area which was also extensively damaged during the latter stages of the war, there was considerable low-rent housing development. The first of these schemes visited was that known as Les Docks, by architects Fayeton, Remondet, etc., the main block of which was already completed and occupied; but in addition there were three part completed blocks still under construction. The completed 9-storey block is of a somewhat unusual appearance, as is shown in the illustration, having apparently had a large hole left out of the middle.

The system of planning is that of staircase access, although in order to mask the multiplicity of entrances appearing on the façade these have all been linked together with a long covered access corridor which is illustrated together with the plan of the typical flat.

The system of construction was again that of the normal concrete frame with slab infilling to the walls, which then receive an outer skin of precast facing slabs. Window frames were also precast.

Due to the raising of the level of both banks of the river at this point, in order to gain greater headroom under the new bridges which are being built, it was possible to construct the basement to this block, and the other three blocks still under construction, above ground level and subsequently to fill the site round them. This basement has been used not only for an oil-burning central heating installation but also for tenants' bicycle and pram storage and workshops.

Adjoining this development was another scheme of low-rent flats consisting of 10-storey and 4-storey blocks, also utilising a high proportion of precast concrete units in the construction. This was erected on the site of some old military barracks which were destroyed while occupied by one of Rommel's armoured divisions.

In the southern part of the city, also in an area which was bombed and which had contained slum property prior to the war, at **Sotteville,** a redevelopment scheme was under way, consisting of 11-storey slab blocks which had a number of interesting features. Extensive private balconies were provided to each of the flats, extending over the whole frontage of each flat—this had the somewhat unfortunate effect of the access balconies which are now becoming rather unpopular in this country. Each flat also had an external ventilated drying space on the balcony for washing, which seemed to be a good compromise solution to an ever-recurring problem in multi-family dwellings, and one that can be regarded as reasonably economical. These drying areas are illustrated, and were subsequently seen in other schemes.

The planning of these blocks was based on the staircase access system and spacious entrance halls were provided, each of which included the provision of postmen's and tradesmen's boxes, which were also found in many other schemes all over the Continent. These obviate most of the use of lifts by visitors other than tenants or their guests, and undoubtedly save a great deal of time, trouble and annoyance. In some cases, although not in this scheme, they are planned in a form of vestibule, the inner door to which can only be opened by an electric lock operated by the tenants, or by a key.

The lifts in this scheme stopped at alternate half-landing levels, as this was evidently considered to give adequate service to all flats, but it is a system which has unfortunate repercussions if used in this country inasmuch as the higher rate of subsidy is refused by the Ministry of Housing where such an arrangement is resorted to. This attitude appears to be entirely unjustified, as the flats do undoubtedly enjoy the service provided by the lifts.

Staircases, which are always a delaying factor in all forms of construction, were precast in these buildings in a very simple manner. Although tower cranes were available and used throughout, it was decided to break down the precasting to smaller units, and, rather than casting the staircases in complete flights as has been done elsewhere, in this case a saw-tooth shaped string is cast separately and also separate treads and risers. These are in sections very much easier to handle, the cranes being required solely for the purpose of handling the strings, and, in practice, the step-shaped soffit is not found in any way unsightly.

The typical flat was planned without the use of the wasteful unproductive internal corridor—in fact on the basis of the 'open plan'. Access to all the rooms is obtained in this case through the central living room or salon, and this produces at the same time both an economical and spacious arrangement. Further economies were secured by the use of internal w.c.s and showers.

Central heating through a convected system at high level was provided to all flats, and artificial ventilation installed not only for internal w.c.s and bathrooms but also to the cooker space in the kitchen—although it should be emphasised that these kitchens also had natural light and ventilation.

The costs of construction of this scheme work out at approximately £2 10s. 0d. per square foot, which can be regarded as an extremely low figure. It will include, when completed, a school, maternity clinic, swimming pool, youth club, women's institute, dispensary, restaurant, covered market, and a church. The architect is Monsieur Lods.

Paris. Of the numerous high density flat schemes under development on the outskirts of Paris, the four tower blocks at **Villeneuve St. Georges,** designed by M. Solotaref, and forming part of a development of three hundred flats, was, from the planning point of view, one of the most interesting. The blocks each contain 15 storeys, of which 12 are used for living accommodation, with the entrance level devoted to tenants' storage accommodation, postmen's and tradesmen's boxes, and, in one block, a concierge's flat. The upper floors contain tenants' drying cupboards and communal rooms and hot and cold water storage. When visited, the scheme was still partially incomplete and, unfortunately, no garden work had been carried out. When the blocks are in their final setting with lawns, trees and shrubs, some of the hardness of the schemes will no doubt tend to disappear.

The form of construction was interesting and consisted of in-situ floors and internal columns, with precast external load-bearing mullions at approximately 2 ft. 6 in. centres, and it was this feature which gave these buildings their characteristic appearance. Cladding was also in the form of precast concrete slabs and so much unrelieved concrete externally was somewhat dull in appearance. None of the flats was planned with balconies as will be seen from the plan.

Each block contained two lifts, in which there was an ingenious form of double-fold door which could be opened when required to its full extent, giving an opening of some 8 to 9 ft. for purposes of carrying furniture. Normally only a single leaf to the door is used by passengers.

These four blocks are shown in relation to the surroundings which are still used for agricultural purposes, and it was hoped that the density of the development was to be utilised as a means of preserving these surroundings. Unfortunately however this was subsequently found not to be the case, as in fact further development is in due course to be extended over the whole of the adjoining twenty to thirty acres of land.

The blocks are planned with 2-bedroom and 3-bedroom flats with a varying orientation which appeared to be entirely satisfactory in practice.

Cité de Pantin. Designed by architect D. Honegger, this was the next scheme visited. Ultimately development here will consist of over two thousand dwellings on municipally owned land. The scheme had only recently been started and the photograph shows one of the 14-storey blocks in course of construction. The appearance of this development, including the high blocks when they are complete, is shown in the sketch perspective and in a photograph of the model of the whole scheme. Illustrated also are plans of the typical blocks which

contain flats of all sizes. The 14-storey block at present under construction contains on each typical floor one bed-sitter, two 1-bedroom and two 2-bedroom flats with access from a single staircase—and this is, of course, an extremely economical arrangement.

A low block of 5 storeys is also under construction, and the system adopted in all of these buildings is the same, embodying a high degree of prefabrication of reinforced concrete units. The system was extremely simple in operation, construction being undertaken by a surprisingly small labour force. The standard of finish was high, as with nearly all other French reinforced concrete work.

No scaffolding is required with this system of construction, although the tower crane was, as usual, in evidence; illustrations indicate the system of construction with typical wall cladding units and also a precast concrete standard window frame. The method of precasting and vibrating the floor beams is also illustrated: all of this work being carried out on the site so that the units could be lifted direct from the casting shed into the building with the minimum of trouble and breakage, and no transport costs. In spite of the fact that casting of these units was taking place on the site, which was extremely restricted, there was no undue congestion and a complete freedom from the evidences of disorganisation which are so frequently found in a scheme such as this.

The staircases were precast in this scheme in a similar technique to that adopted at Sotteville and use made of the partly precast floor beams to carry centring panels on to which the in-situ floor was subsequently poured. False ceilings were then formed by the use of compressed straw panels wired on to the underside of the precast beams and subsequently plastered —an ingenious combination of new and traditional techniques.

A development designed by architect M. Pison at **Porte Brancion** at **Vanves** and consisting of three 13-storey slab blocks was subsequently visited. This construction was of considerable interest because of the extensive use of precast pumice blocks of every conceivable type in all parts of the structure. These were manufactured on the site extremely rapidly by a special vibrating machine of German manufacture, which is just becoming available in this country. The units were used not only for ducts, flues and partitions, but also as infilling between secondary beams in the floors. The floor beams were also precast on the site with projecting stirrups, and ultimately floor construction was carried out with the use of an in-situ topping of concrete. Although cranes were in use on this site a great deal of the precasting work was in small units and could be readily handled without resort to mechanical equipment. The basic structure however was in in-situ concrete.

An interesting detail, but one not entirely unique, was that of the precast drainingboards to sinks, shown in the illustration, in which the whole unit was cast in one

Pont de Sèvres, Paris

piece. Similar details were subsequently seen but with the alternatives of terrazzo or mosaic finish in Italy, parts of Switzerland and the Netherlands, where the supply of suitable sanitary fittings appears to be difficult and of the type of draining-board to which we are accustomed evidently impossible: the sanitary fittings themselves being also manufactured in this manner.

Another scheme with slab blocks linked in order to avoid the 'unresolved duality', similar to that at Rouen, was visited at **Pont de Sèvres.** This scheme was designed by architects Zehrfuss and Sebag, and was of particular interest in that the external cladding consisted of concrete slabs which were precast on the floors at each level and subsequently hoisted into a vertical position with special gear devised for the purpose.

The standard of reinforced concrete finish here was high as elsewhere in France, and the planning included the provision of sunny children's rooms on the south side and adjoining the entrance hall in each block. The potential benefit of private balconies, but without additional expenditure or the loss of room area, was obtained by the use of french windows externally to certain of the habitable rooms with a fixed balustrade outside.

The whole scheme was centrally heated, fuel being gas-oil (Mazoute), which is a popular and economical fuel widely used at present in France. Floor panels were used in place of radiators and these, of course, had the great advantage of not sooting up the walls, and created on the whole more equable conditions.

Lifts were provided to serve the flats at half-landing levels, and doors of the normal pattern were installed only to the enclosure but not to the lift car. It is questionable whether there is not some degree of risk in this widespread continental practice of omitting car doors, and the swing door across the staircase landing also has some objections.

Planning was of the normal staircase access type with three staircases to each of the 10-storey blocks, each of which contained a total of 60 flats. In addition to these three 10-storey blocks there was also one small 5-storey block with eight flats, giving a total of 188 flats in the scheme as a whole.

The site, which is close to the River Seine, had great amenity potentialities, but unfortunately work had as yet not been carried out to the surroundings to provide the necessary gardens, so desirable with these flat schemes.

Strasbourg: Cité de Rotterdam. This scheme has received a great deal of publicity inasmuch as a number of innovations in regard to the contractor/civil engineer/architect relationship were tried out here for the first time. After a competition was held amongst a limited number of architects the contractor was appointed at an early stage and worked in close conjunction with the architect and engineer during the whole of the planning work as well as subsequently. The result was that technical mass production methods could be devised and utilised to the full, and the maximum possible advantage taken of prefabrication methods. It also had the effect of ensuring that the whole of the plans were complete before work started; with the result that construction was able to proceed uninterrupted and without modification: a matter of major importance.

As a result of these measures and of good site organisation, although the original contract time was eighteen months for the construction of the eight hundred flats, this was cut by some three months in the event.

Great efforts were made to design a scheme in which all the dwellings should have a feeling of open space and the best possible view over the River Rhine adjoining. From the diagrammatic studies carried out by the architect a solution appeared to have been reached, but in reality the layout does not entirely achieve what it set out to do. Two schools have been allowed to obtrude in the central area, and these unfortunately cover a good deal of ground. It is difficult to understand why they were not made much more compact and planned so as to occupy a site on the perimeter of the area. A further difficulty, which is no doubt temporary, is that the view from the lower levels is completely obstructed by a number of prefabricated houses along the river bank, but in part also by some military barracks of a rather vintage aspect.

There are, of course, great advantages in the use of precast concrete cladding with exposed gravel aggregates or other similar finishes, but the gravel colour, unless relieved elsewhere by bright and cheerful colour, is apt to be sombre and somewhat depressing. This was a feature of so many concrete buildings seen elsewhere. In the case of Cité de Rotterdam however very dark colours have been used for all the paint work, and although sunblinds were installed to the majority of flats these were also dark in colour.

So much high density housing is still basically an arrangement of Lamella blocks, but this scheme at Strasbourg showed, perhaps as well as any, the limitations of this form of design. Some of the blocks were excessively long in proportion to their

height, and this was emphasised by the use of access balconies. The effect on the northern perimeter of the site was that of a very high and sunless boundary wall, although perhaps in part this impression was due to the fact that the visit took place in weather very similar to that often reputedly experienced in Manchester.

The finish was not of as high a standard in this scheme as many of the other buildings visited in France, with clay blocks left unrendered, for example, on those walls adjoining the access balconies, and the 'pots' left exposed on the underside of the access balcony slabs. Central heating was provided throughout by means of solid fuel boilers which were imaginatively dealt with, although perhaps with some slight loss of lettable space, by enclosing them at ground level in a boiler-house in which all the walls were of glass. This may prove to be rather a tempting target for tenants' small boys.

SWITZERLAND

Although Switzerland has not as high a population density as Great Britain it is more densely populated than Denmark, for example, and this would suggest a tendency towards increasing urban densities in view particularly of the relatively few urban areas suitable for building purposes.

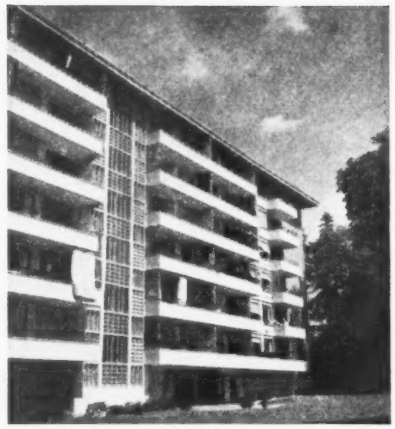
At the moment the density problem is only beginning to be understood fully and the need to use to a greater advantage central urban sites. The trend appears clear however and both town planners and those responsible for individual housing schemes are formulating or in some cases constructing schemes of appreciably higher densities than hitherto.

The most notable feature in regard to all Swiss building is the precision and quality of design and craftsmanship, and, in housing schemes more especially, the orderliness of their layouts. Garden design to most housing developments reaches a standard which is not exceeded elsewhere in Europe, and, what is of equal importance, not only is a great deal of effort devoted to the laying out of these gardens, involving the employment of garden architects, but maintenance problems do not appear to cause the same difficulty which they do in this country, and although they are used quite freely by children and others there was little indication of damage or ill-treatment. The result is that most Swiss housing schemes start off from an amenity point of view with a tremendous advantage over many schemes seen elsewhere.

Geneva. The housing scheme known as **Domaine de Beaulieu,** consisting of a number of slab blocks at a moderate density, was visited. These were designed by architect/engineers Honegger Bros.

The total number of flats in the scheme was 200, of which 42 were bed-sitters, 102 2-room and 56 3-room flats.

Central heating and hot water were installed throughout, with solid fuel boilers. Communal laundries were also included in the scheme with washing machines and



Domaine de Beaulieu, Geneva

automatic drying machines. The blocks were planned with staircase access with two flats per floor served by each staircase and lift. On the ground floor of each block there was a spacious entrance hall finished in marble and terrazzo and containing some extremely well-designed tenants' lockers and postmen's boxes. There was also the usual telephone intercommunication system so widely used all over the Continent, by means of which callers can speak with tenants from the entrance hall and subsequently gain admission through the operation of the electrically-operated vestibule door.

Refuse disposal was by the normal chute system, which is the case in by far the majority of all housing schemes visited, and on the ground floor of each block storage accommodation for bicycles and prams was provided.

The standard of equipment to the flats was excellent and included refrigerators and electric cookers.

The intervening gardens were of the normal high Swiss standard, and plants, trees and shrubs, both in gardens and flower boxes, were to be seen in profusion everywhere.

Parc Malagnou designed by architect Saugey was also visited in Geneva, and this is a scheme which was interesting for a number of reasons. Although the cost of construction works out at the equivalent of 5s. 9d. per ft. cube, or 46s. 0d. per ft. super, which cannot be regarded as high, the quality of finish and design was of a very high standard. Materials used included terrazzo for internal halls and staircases; external cladding included a proportion of marble and artificial stone and all fittings and equipment were extremely well finished in a variety of stainless metals.

The planning of the block is an extremely economical arrangement, and although with the 'H' type of layout flats enjoy widely different orientations, and, in a number of cases, have only one outside wall, the practical effect of this was not found to present any overwhelming disadvantages.

Construction was, in part, a normal reinforced concrete poured in-situ, with the exception of the columns which were precast and subsequently dropped into position over a form of dowel, in one piece. This system undoubtedly saved a considerable amount of complicated shuttering, but it is doubtful whether the dowel and the subsequent concreting in-situ of the floor slab round the column could be expected to provide sufficient rigidity for more than a maximum of 4 or 5 storeys.

Staircases were also precast in a system resembling that referred to earlier in certain French schemes.

Zürich: At **Letzigraben** two 12-storey tower blocks which show the possible future trend of Swiss housing development have been constructed. The typical floor to each of these blocks contains four flats arranged in a 'Y' shape, and although this is not the most economical arrangement it was at least found possible by this means to avoid using access balconies, and to permit each of the tenants to enter their flat direct from the central hall into a completely self-contained flat; which suffers in no way from the lack of privacy or exposure to weather inevitably associated with access balconies.

The blocks are constructed with a concrete in-situ frame and infilling panels finished in white Tyrolean cement, with the structural members exposed. The flats each have their own private balconies and an unusually large roof overhang is a feature of the design, which not only gives good weather protection but has the added advantage of forming a support for painters' cradles which can be used for all maintenance work to the exterior of the building.

These tower blocks form a part of a larger development consisting in part of slab blocks of 4 storeys in height and also 'V'-shaped blocks 8 storeys in height.

A small block of shops and garages adjoining one of the tower blocks also forms a part of the scheme, and closely adjoining is a fine open space complex consisting of a park with swimming bath and children's playground, which is particularly noteworthy for the exceptionally high standard of design and garden layout, and in having none of the appearance of the strictly utilitarian and formal swimming pool to which we have become accustomed elsewhere.

Also in Zürich another 'Y'-shaped block, designed by architect K. Egender, was under construction at **Gütstrasse.** This block is 12 storeys in height and planned with three flats per floor round a central staircase and lift well. The construction was in load-bearing reinforced concrete walls with precast concrete windows and spandril units in an artificial stone finish.

The concreting work carried out in-situ had been formed inside timber board shuttering, but this was of such high standard that it was almost impossible to see the joints or any differentiation in the plane. This type of work however cannot really be considered as economical for use in this country as it requires a very high standard of specialised craftsmanship and

considerable care, which is perhaps out of proportion to the degree of finish expected.

Adjoining this and also forming part of the development was a 6-storey block with the similar roof overhang favoured in the case of Letzigraben. The design here, although simple, was well proportioned and of high standard, as also the quality of workmanship and materials.

In the area adjacent to this site there was also a good deal of other extensive low-density housing development, and one of the terminal blocks which was of a higher density was of particularly pleasing design and this was carried out by architect Stücheli, who was also responsible for one of the best of the new small pilot schemes in the centre of Zürich by the river.

Basle. Whilst high-density development is only in its early stages in Basle, there are already one or two schemes of particular interest, either completed or under construction in this city. One of these at Mittlerstrasse consists of three 13-storey point blocks which have been erected so as to form a dramatic climax to one of the main routes leading out of the town. These have been designed by the architects Gfeller and Mahly. This is in every respect an outstanding scheme, constructed mainly with 15½ in. and 8 in. load-bearing brick walls, which it was claimed was extremely economical in this instance. The exceptions were the basements and ground floors, which were in monolithic concrete construction and at these levels were placed the communal facilities, including laundries and drying rooms and caretakers' flats.

The planning was extremely compact and the flats neatly arranged on the basis of four per floor. The standard of accommodation was equivalent to our own with the exception that greater use was made of valuable space by the use of the open plan. The standard of equipment was rather higher than that to which we are accustomed at the present time. The flats had their own private balconies recessed within the main structure, and this, of course, has the great advantage of not causing over-shadowing to the flats below.

The entrances to the blocks were planned in the form of an outer vestibule with access obtainable to the lift and inner hall by operation of the tenants' electric door locks. Intercommunication telephones and postmen's boxes were fitted in the vestibule space.

As is customary in so many Swiss buildings, the finish and quality were high; marble and terrazzo and a variety of plaster techniques were used widely, particularly in all the public spaces.

This scheme resembles in many ways the typical Scandinavian point block and has a staircase in the centre of the block, although in this case it receives indirect daylighting through glass bricks let into the walls at half-landing levels. This however does not seem to cause any loss of privacy in the flats adjoining the staircase.

Point block, Gütstrasse, Zürich

Lifts are of similar specification to those used in American 'high-rise' buildings, and include the collective calling system, which, although involving higher initial capital costs, results in considerable economies in current consumption. Speeds, too, are higher than those to which we are normally accustomed.

Each block contains 24 3-room flats and 26 2-room flats, and there is a roof terrace available for the use of all tenants. The fact that this is available to all presented a challenge to the architect who has taken great care to avoid many of the risks inherent in the use of these roof spaces. Parapet walls have been designed with a broad horizontal table and a high vertical parapet to make it virtually impossible for one to look directly towards the ground by leaning over. This has been deliberately done to eliminate the risk of accidents through vertigo. An additional safety measure designed to cater for children is the children's windows let into the parapet wall at intervals, very much resembling the 'squint' used in medieval times—but in the 20th century vertical pattern. In this case the purpose is to allow a view of the ground and the surroundings without the necessity of climbing the parapet.

The blocks are spaced at intervals of 23 metres, at which distance overshadowing was found to be negligible. Outlook and orientation from all flats moreover was extremely good, although this varies as between one flat and another at each floor level. The fact that a proportion of the flats have only one outside wall did not seem to detract in any way from the standard of natural ventilation.

The total cost of the scheme approximates to 4s. 4d. per foot cube, which is also the normal cost of 4-storey flat construction in Switzerland. Rents average just over £130 per annum inclusive.

The architects for the foregoing scheme were also responsible for another development embodying a 13-storey high house, which is at present under construction in the centre of the city. Before this scheme received the approval of the Town Planning Authority a great deal of research and study had been put into the question of the skyline and the effect of such a construction on some of the older historical buildings in the city, and the way in which this analysis had been built up was a most encouraging example of enlightened town planning control.

The system of construction in this case was however partly in reinforced concrete and partly in steel skeleton where it had been necessary on the lower floors to bridge over an underground stream. The tower crane was centrally sited so as to facilitate construction in all parts of the building, although in this case there was at the stage which work had reached very little precasting. The shuttering used for the floor slabs was of interest; consisting of an adjustable form of trellis work on which building paper and wood wool to form a permanent lining were placed. Although this system had the advantage that the shuttering could be adjusted to varying sizes of panel, it is not considered that it is sufficiently rigid and instances were seen in which the concrete was forcing out the wood wool lining due to lack of support. This would clearly lead to costly subsequent remedial work.

A model and photographs, together with the building programme, were displayed alongside the construction, for the information of passers by, and it was noticeable how much interest was being taken in these details by the 'side-walk foremen'. This is also an idea which has been tried in the United States and seems worth while repeating. The total cost of this latest scheme was 3½ million Swiss francs, which calculated as a cube cost gives the equivalent of approximately 5s. 5d. per foot cube.

A very popular new type of glazing unit has been adopted not only in Switzerland but in a number of other continental countries in which double glazing is accepted as standard practice. Both sheets of glass are contained within a single frame which forms a centre pivoted hopper, which can be revolved in most cases through a complete circle to enable the outside face of the glass to be cleaned. In between the glazing in some cases there is a very neat venetian blind which can be operated by a cord from outside the frame. These windows are normally provided with a lever type of catch on the bottom edge, and in one case were seen with an automatic latch at the top and out of the reach of children, to prevent the creation of a dangerously wide opening at sill level. The whole arrangement appeared to be one practical solution to a problem which is of increasing importance in high flat buildings—the method of cleaning and glazing windows without the use of scaffolding, ladders or cradles. As for the double glazing, the additional cost here must be far outweighed by the considerable savings in fuel in view of the wide adoption of this system in many other countries over a long period. It is one method of increasing the degree of natural illumination in accommodation, without the disadvantages normally inherent in large areas of glass and where only single glazing is used.

ITALY

The tour was confined to Northern Italy because it was felt that there conditions similar to those in our industrial cities would be most likely to be found, and also for reasons of limitation of time. In **Turin,** however, no substantial housing redevelopment is taking place in the centre of the city but rather are efforts being made to restore so far as is possible pre-war conditions.

There are however a number of buildings in the centre which are of interest, particularly the point blocks in each case on sites in close proximity to main street frontages. These are to a maximum of 16 storeys in height, others are of 12 storeys; but apparently in no case were Town Planning objections made either on the score of daylighting, sunlighting or orientation. The facts appeared to be that these flats were highly sought after because of their convenient location, but more detailed information on costs, etc., with regard to these is still being sought.

The majority of housing work in Turin is being carried out in the suburban areas outside the city proper, where the slab blocks and terraces and a proportion of smaller houses are still the favoured form of development.

The slab blocks were somewhat similar to the type of arrangement to which we are accustomed with a staircase access in some cases, but far more frequently with a form of gallery access. The design of the typical block had however a characteristic freedom of treatment which distinguished it from the block we are used to. Unfortunately however layouts were somewhat stereotyped and there was a fairly strict adherence in most cases to the rectangular type of arrangement. This was only saved from becoming monotonous by the skilful use of the many native materials with which Italy is fortunately endowed, including a variety of natural marbles used in different ways, mosaics, terrazzo, etc., and the courageous use of bright colours and variations in texture in plastering. It is seldom that bricks appear as an exterior finish, as the quality is such that they are normally rendered over if used at all.

It was stated categorically by Government officials from the Ministry of Works that flats in the tall blocks were being erected at no higher cost than that for the smaller units in 1-, 2-, or 3-storey blocks. These averaged in cost approximately £1,250 per unit.

As has been remarked elsewhere, garden layouts form an important part of any big housing development scheme and unfortunately many of the areas visited fall short in this respect, although it must be admitted that a number of these clearly were not complete. In one case the area was so featureless that an artificial hill had been created to give some interest, but trees, shrubs and lawns were still not there. It is to be hoped that these will be added later.

The 'Skyscraper', Piazza della Repubblica, Milan

Milan. Milan is a city of high buildings, and high blocks of flats, including a number of point blocks, are commonplace. Many of these are, of course, for letting at what are admittedly moderate to high rents but a number are now under construction or reaching completion to be let at low rents, and therefore on a comparable basis with the majority of the housing being carried out in this country.

The majority of the low-rent housing for Milan is however, as with Turin, being built on the outskirts and there are very considerable areas at present under development. The design of the blocks is similar to that adopted in Turin, and the same cost criteria apply.

Many experiments in precasting concrete techniques were under way but, as yet, for the most part construction is the more or less orthodox in-situ reinforced concrete frame with a clay block or brick filling and subsequent external rendering. The variety is obtained in these cases by interspersing concrete panels or with the use of a limited amount of marble shippings.

In the centre of the city is a building under construction known to all in Milan as 'the Skyscraper' and reputed to be the tallest reinforced concrete flat building in Europe—31 storeys in height. This was evidently not intended as a low cost scheme, rather the contrary, but nevertheless was of interest both in regard to the system of construction adopted and also the planning. This building was constructed as a self-contained unit, complete with its own independent electric generating station with the necessary Diesel power and oil-storage. It was also provided with central heating and hot water plant; artesian wells and pumps; booster pumps for the cold water services to the upper floors and for purposes of fire-fighting; a complete air-conditioning system, and, in the basement, a garage for the use of tenants.

On the roof was a television station and an observation room. All lifts were of special high-speed pattern serving groups of floors, as is the practice in American skyscraper buildings.

The structure was a massive in-situ reinforced concrete frame with pumice block infilling, which was ultimately to receive an external cladding of marble. This work, contrary to the present continental practice, was being carried out from

scaffolding, but this, as a safety measure, was entirely enclosed with reed matting.

All the windows were specially designed and fabricated with aluminium frames, most of these being centre-hung hoppers, and specially designed refrigerator-type handles were included with a rubber sealing gasket all round the frame. With these rather elaborate measures it was hoped to be able to avoid rain penetration which has been such a problem in some of the latest skyscraper blocks in Manhattan.

The building was divided to allow for office accommodation up to the level of the surrounding property and above that it was devoted entirely to flats and the communal services already referred to. The architects were Soncini and Mationi.

WEST GERMANY

As is now generally well known, reconstruction in West Germany has been extremely rapid, but what is of particular importance is that not only does this reconstruction include housing but also a high level of building production for commercial and industrial purposes. Key industries have, in many cases, been completely reinstated and insurance houses and banks have been erected, together with shops, hotels and other commercial buildings in the centres of the largest cities, and to a standard and quality which a visitor from this country is bound to find extremely impressive. Not only have commerce and industry in the normal sense been catered for however but also the tourist, who is regarded as a valuable source of income, and those cities or parts of cities which are of traditional tourist interest have received special attention. A notable example of this is the centre of Hamburg where adjoining the lake known as the Innen Alster are shops which would vie with the best of any other city in Europe.

With regard to housing, perhaps the most significant fact of all is the extent of output; and as an indication of this it might be mentioned that over 520,000 dwellings were constructed in 1953 with a labour force closely approximating that available for building purposes in this country. This gives grounds for very serious consideration indeed of questions of a stable building programme, restrictive practices and productivity.

The costs of housing construction in West Germany for an average flat of 550 sq. ft. were £1,165 a unit. Flat areas, however, vary from 430 to 860 sq. ft. The corresponding costs per foot super are 27s. 0d. to 34s. 0d. respectively, and 2s. 0d. to 2s. 2d. per foot cube; and this is on a basis of standards very similar to our own.

Other notable features of West German building construction at the present time are the widespread use of the tower crane and of the conveyor belt (or 'building machine' as it is known). The latter is favoured in many of the smaller schemes and has been found to give just as great economies. In fact the view is taken that unless the scheme is a large one it is difficult to justify the use of a tower crane.

'Y' point block, West Berlin

'Bims' brick—or pumice block as we know it in this country—is extensively used for a very great variety of purposes. At one stage, too, reconstructed bricks made from pulverised bomb débris were also widely used, but this was rather a question of expediency than choice of the most suitable material.

Experiments have also been made with materials such as 'Siporex' or 'Ytong', which are so popular in Scandinavia, although the use of these has not yet become general. There is no doubt however that a form of foamed concrete is particularly valuable when used in precast external cladding sections, and that its use is likely to increase.

On every contract of any magnitude the cement silo and well-designed concrete batching plant was always in evidence, and although these and other points referred to may not fundamentally account for the whole of the difference in productivity they are unquestionably contributory factors.

Stuttgart. An example of the present trend was the 14-storey tower block **'Max Kade House'**, which although designed to accommodate university students, and therefore a specialised solution to a problem, is of considerable interest. It is constructed in 'no-fines' concrete rendered on the exterior, and the Scandinavian system of sliding shuttering was utilised, with the result that the structural work was completed in an extremely short period of time.

The building consists of a number of bed-sitting rooms on each of the typical floors, with communal bathrooms and cooking facilities. On the ground floor there are study rooms and on the top floor a restaurant. The finish and equipment throughout were of an extremely high standard, and colour schemes everywhere bright and cheerful. The external finish was painted white and showed no signs at all of the crazing which so frequently occurs on large areas of rendering. Subsequent maintenance however is likely to create some difficulty.

A group of 11-storey point blocks, some completed and some still under construction, were visited on a difficult sloping site on the perimeter of the inner city. These were constructed in an orthodox system of concrete skeleton and pumice block infilling, which was subsequently rendered and painted in a variety of pleasing pastel colours.

The layout of each block consists of four flats per floor, two of which are entered at half-landing level and two at full landing level, with the staircase planned round a small central light and lift well. This however tended to be extremely dark at the lower floor levels but did at least provide some natural ventilation.

The living rooms to the flats, all of which were spaciously and well planned without internal corridors or lobbies, each had a private balcony. The flats in the various blocks had a variety of aspects, but this did not appear in any way to detract from their value. Central heating was installed throughout but convector ceiling heaters with fans were used instead of radiators, and these provided the most comfortable conditions. Hot water was provided to each of the flats by independent gas water heaters.

All bathrooms and w.c.s were planned internally without natural ventilation, but instead duct ventilation was provided, without however any mecahnical installation, and this was found to be extremely efficient.

Standards throughout were fully equal to those normal in this country, but in addition there were the usual house telephones and electric door locks as a means of preventing intrusion of unwanted visitors.

It was understood from the City Planning Office that further developments were taking place with regard to the construction of point blocks in the centre of the city, and plans were already completed for a new type of block containing six flats per floor, in which each flat had been given a southern aspect. Unfortunately, it was not possible at this stage to obtain copies of these plans. The layout of the typical floor in this scheme is however similar to another point block subsequently inspected in Oslo. Plans were also, it is understood, well advanced for other 15-storey point blocks and slab blocks, but no further details of these are available to date.

Bonn. The principal purpose of the visit to Bonn was that of discussing planning policy and other general questions of housing with Federal Ministry officials from whom a great deal of valuable and detailed information was obtained. During the visit however the opportunity was taken to inspect an interesting 10-storey tower block of 'H' plan with eight small flats per floor; primarily intended for single people who were the employees of Occupation Forces. This plan was somewhat unusual in its arrangement in so far as it allowed for a staircase to receive natural light and cross ventilation, but this unfortunately resulted

in some loss of space in the central hallway at each floor level, also a characteristic of the plan.

The flats, although in many cases planned with only one outside wall, were entirely satisfactory in all respects. Each flat consisted of a bed-sitting room with a kitchenette, bathroom and entrance lobby; and each had its own balcony. The flats were orientated so that they faced either east or west, but this was felt to give reasonable sunlighting conditions.

The ground floor to the block contained a number of small shops, and a part-covered roof terrace was also available for the use of all the tenants.

Basement and sub-basement provided accommodation for storage, workshops, etc.

The construction was in-situ reinforced concrete with the frame exposed and a solid panel infilling of bricks with a cavity and inner lining.

The architects for this scheme were Appel, Letocha, etc., who also carried out a similar scheme at Bad-Godesberg.

The British Occupation Forces have been responsible for the erection of a British town to house families both of troops stationed in **Cologne** and of the civilian staffs. The area has been most attractively laid out to house some 1,500 people in a combination of flats and small houses, and although the density overall is not especially high the flat blocks are of particular interest. The development is entirely self-contained and has its own shopping centre and other communal facilities and a district heating plant. The architect for the scheme was W. Ripahn.

Hamburg. One of the most interesting schemes which was visited was the 14-storey tower block at **Habichtsplatz** in the northern part of the city, designed by architect Knerlich. This building is part of a high-density development and forms the focal point to a vista up one of the main radial roads from the centre of the city.

Although the major part of the development consists of high slab blocks, this was a point block almost in the Scandinavian tradition and was, in fact, constructed using the Danish system of hydraulically-operated sliding shuttering. By this means the structural skeleton was completed in fourteen days, but the experience was that for a variety of reasons, only one of which was that of bad weather, this advantage in progress was not subsequently maintained. It is, of course, essential that all the other trades are properly phased in if the additional speed of this system is to be of ultimate advantage, and unless cladding is designed on the simplest and speediest technique and finishes reduced to an essential minimum, it is obviously difficult to expect the whole of the work to proceed at the same pace as the structure.

Although in this instance there may have been little saving in time, it is claimed that the climbing shuttering system did save something like 10 per cent in the overall cost and that this was largely related to the increase in productive floor space, due to the fact that external walls were only 12 in. in thickness at the maximum.

Habichtsplatz, Hamburg

Brick infilling panels have been used in conjunction with the concrete structural walls externally, and the whole cement rendered in a very pleasing two-colour effect. At one point free sculpture in metal has been used to enliven the design.

The planning consists of eleven flats per floor with access from single staircase and lift and internal corridor, there being 118 1-room and 10 2-room flats in all.

Maximum possible use has been made of available space by planning the block so that one face coincides with the edge of the carriage-way and a pedestrian arcade is formed over the footway at this point. Obviously this arrangement can only be adopted in a very limited number of cases, and in this instance is only feasible because the block is the terminal point of the axial road and therefore creates no daylighting problems.

At **Hohnerkamp** an extensive development was nearing completion, and although again to moderate density level only, consistent with its siting on the fringe of the city, it contained a number of 6-storey 'V'-shaped tower blocks with five flats to the typical floor, accessible from the single staircase and lift by a series of short access balconies.

At **Grindelberg,** a suburb of Hamburg, a large development of 14-storey and 9-storey slab blocks was visited. This scheme, which was extremely impressive although perhaps a little overpowering, was initiated by the British Occupation Forces and subsequently taken over and is being completed by the municipal authorities who are using one of the blocks as their civic headquarters. All the remaining blocks are however devoted to flats, each of the 14-storey blocks containing 180 apartments. It is now under the direction of architects Hermkes, Jäger, etc.

The earlier blocks were constructed with a steel frame, but subsequently reinforced concrete was substituted in the remaining blocks. Cavity wall construction externally is used throughout with special hard yellow bricks forming the outside skin and pumice blocks the inside leaf. In order to avoid the cracks which normally occur where precast blocks adjoin the concrete structure, layers of felt had been used to permit of the necessary expansion and contraction and an actual joint formed in the plaster finish subsequently.

Rents for these flats vary between about £5 a month for one room to just over £10 for a 4-room flat, including central heating.

The planning is on the basis of six access staircases to each block and shops are provided to ground and first floors, with the topmost floor devoted to studio flats. There is a roof terrace or solarium, which is glass enclosed and available to all tenants in each of the blocks.

Lifts did not serve the top floor, but the space in the lift well at this level is taken up by the motor room, and thus penthouses which so often form an unwanted excrescence on the roof are largely avoided.

Also included in the scheme is a large underground garage which can not only cater for cars of tenants and the municipal staff but also outside parkers.

Of particular interest was the mobile heating plant which was still in use when the scheme was visited, as it had not then been possible to acquire the site necessary for the construction of the permanent heating plant. This mobile plant, which was completely self-contained, was similar to equipment designed before the war for the purpose of drying out newly completed buildings, but used to provide heating to flats in occupation, appeared to be something quite novel and extremely ingenious. As sections of the scheme were completed the plant was moved successively from one area to another, and by this means flats were brought into occupation just as soon as a particular block was completed. The whole estate, as is customary in West Germany, was well landscaped and fortunate in containing a number of very fine trees which assisted greatly to soften the lines of what was otherwise a somewhat severe layout.

BELGIUM

Information was given at the Brussels Conference which included not only costs from Belgium but also Dutch and German sources, and this indicated that although in Holland and Belgium high flat building was slightly more expensive than the single family house or the low flat building, in Germany the most expensive form of building was the small house, and that flat building was generally about 20 per cent less costly. Figures given subsequently of Swedish experience in regard to comparative costs very closely confirm this conclusion.

There was little modern high-density development in **Brussels** itself, although a few isolated schemes were either under construction or had been completed since the war, of which one consisted of twin 15-storey tower blocks in close proximity to the Rue de Luxembourg. Another scheme was also visited on the Porte de Hal, and this consisted, in part, of a 13-

storey tower block which was being constructed as part of a slum clearance scheme in one of the most densely populated districts of the inner city.

In **Antwerp** however were a number of schemes of especial interest, and these included **'Ten Wyngaerden'**, designed by architects Brosens and Van der Voodt. This was planned in the form of a 7-storey block close to the street frontage, served by a central staircase and balcony access, and a 2-storey block on one side of the garden quadrangle which was formed at the rear. The site was typical of many of the gap areas with which we are familiar and a good example of how the overall character of the street frontage can be maintained, but at the same time how a block designed to meet contemporary needs can be interposed.

At **Kiel Anvers** a scheme designed by architects Maes, Maeremans and Braem is in course of construction, and this will, in due course, when completed, include a total of 845 dwellings of all sizes, and shops, garages, a children's playground and recreation room, a power sub-station, and already includes an independent central heating plant.

The blocks, which appear to owe something to the Corbusier *Unité* inspiration, are of the access balcony form of planning and raised on massive concrete 'pilotis.'

They are 12 storeys in height and served by two lifts and staircase towers, which are linked to the main block by light concrete gangways. The access balconies are also separated from the main block by light wells, which gives them a rather slender and more delicate feeling than is normal with the access balcony design. This has the practical advantage, too, of permitting light penetration into those rooms planned at the rear of the building.

The flats are of high standard, both in space provision and in regard to equipment. The 3-bedroom typical flat is planned so that one of the bedrooms is approached through the living-room/dining-room—a form of open plan. In the 1-bedroom flat the bedroom is also approached through the living-room, and by this means considerable economies in the elimination of unproductive space have been effected.

The normal system of refuse chutes and containers is used, and there is a wireless/television relay installation similar to that used in this country. The blocks each have an elaborate house telephone system, permitting communication between the entrance hall and all the flats. Gas, water and electricity services and heating sub-mains are all enclosed in a glass duct visible at high level on the underside of the first-floor slab, and as these services are painted in bright colours they form an attractive feature.

The construction consists of a poured in-situ reinforced concrete frame with external cavity walls consisting of a brick outside skin and precast blocks inside. Foundations include 36 ft. precast piles. The concrete structure, because of its somewhat unusual design, was admittedly expensive.

Zuidplein, Rotterdam

Contrary to the usual practice, the distribution mains from the central heating plant were merely lagged and water-proofed and buried in the sub-soil but were not enclosed in ducts. It was claimed that there was only a loss of $\frac{1}{2}$ degree centigrade at the terminal points, and that while this system obviously introduces suitable economies there appeared to be no disadvantages.

Responsible for this development is the large building society, Huis Vesting, with its headquarters in Brussels.

The well-known architect Van Kuyck has designed a scheme which is under construction at **Luchtbal** with four 9-storey blocks which are nearing completion and which ultimately will include a total of 1,800 dwellings, with a shopping centre, church, schools and all other communal facilities. 17 per cent of the site area is devoted to housing purposes and densities are correspondingly high. Nevertheless, the flats that were visited were in no way lacking in amenities on this account.

Ultimately the scheme will also include six 14-storey tower blocks, but detailed plans of these and costs, etc., are not yet available.

The site was originally a polder, and this was reclaimed prior to building with the sand-filling technique normal in the Netherlands. District heating is to be obtained from a nearby electric power station in due course, and the mains had already been laid a distance of three kilometres when the site was visited. The 9-storey slab blocks were externally somewhat monotonous in appearance and the balcony design rather forced. The arrangement of free standing columns and entrance halls forming the ground floor of each block did however help a great deal to give a feeling of lightness to blocks that were otherwise, due to their proportions, rather over massive.

The planning of the flats was neat, particularly the way in which all the plumbing had been concentrated in a cavity behind the lift well, and the rear part of this used for the vertical risers. An interesting detail was the water point provided at every landing level for purposes of cleaning down staircases and also a demountable drainage point for taking away the surplus water. The flats themselves were spacious and of a high standard of design and equipment. Everything was planned on a standard module, and although the construction was in normal in-situ reinforced concrete it had been reasonably rapid.

Rents for the flats already completed averaged approximately £13 per month, which, for Belgium, was not considered high. Other details of costs were unfortunately not obtainable. The scheme is the responsibility of another building society—Onzewoning.

HOLLAND

Rotterdam. The complete destruction of the centre of Rotterdam has provided the opportunity for one of the best organised comprehensive city plans in Europe, and while this is being gradually implemented most of the development is, of course, commercial, although a number of blocks of flats combined with shops have been erected.

At **Kleinpolder West** the municipality is erecting seven 10-storey slab blocks with access balcony planning similar in many ways to the planning familiar to us in this country, although in this instance it was gathered that costs are no higher than that of new dwellings or of flats in 3- or 4-storey blocks.

As an indication of typical costs in Holland, figures have been obtained which show that traditional dwellings in the years 1946–47 were being constructed at an average of 2*s.* 0*d.* per foot cube, but by 1949 this figure was showing a downward trend to the equivalent of 1s. 9d. per foot cube, or £1 per square foot. The standard house consists of 80 square metres of floor space, which is closely equivalent to our typical flat of 850 sq. ft. and the total cost for this is about £800.

The architects Van Tijen and Maaskant, who over a period of years have carried out some of the best work in Holland, were responsible for the design of a 13-storey block at **Zuidplein,** which was erected just after the war. The planning here is on the basis also of access balconies with main and secondary staircases and twin lifts. The construction used in part precast concrete units but the main framing was cast in-situ. Balcony columns, wall slabs, etc., appear somewhat heavy as compared with the earlier designs of these architects when using steel construction.

A series of shops is planned adjoining the block at ground floor level, and there are also tenants' stores and the central heating plant at this level. In the typical upper floor there are ten flats consisting of one-room, two-room and three-room units. These were however considered to be somewhat cramped in size, although compactly and neatly planned. w.c.s and bathrooms were arranged in the centre of

the flat with artificial ventilation, and there was also ample provision throughout of built-in cupboard and storage accommodation. In the case of both the three-room and two-room flats, the access balcony adjoined bedrooms, but this did not appear to create any objections, although it cannot be said to be an ideal form of planning.

Another high block by the same architects, who appear to be one of the few firms who have appreciated the advantages of this form of planning in Holland, was that **at Plaslaan.** This is a 10-storey block with a reinforced concrete frame erected in a closely built-up area on a magnificent site adjoining a lake. These seem to be the conditions in which further development of this kind is likely to proceed in the Netherlands, and a number of high blocks are planned for **Slotermeer,** also adjoining the lakeside.

The planning of Plaslaan and the design generally was excellent although again some criticism might be levelled at the planning of bedrooms on the access balcony side of the flats. It may well be argued however that the economies of the scheme justified this slight concession, and the planning was indeed extremely compact and economical, although the flat areas were somewhat low according to our standards. Part of the economy was, of course, obtained by the use of the open plan, nevertheless even in the larger flats this created no real inconvenience.

All flats, as at Zuidplein, had internal bathrooms and w.c.s, and private balconies were provided to each of the living rooms. Although the design allowed for large areas of glass, particularly to the habitable rooms, it is understood that owing to central heating and double glazing conditions were extremely comfortable at all times of the year.

Amsterdam. Development as a whole in Amterdam follows very much the pattern of that in Rotterdam.

DENMARK

In Denmark there are many schemes of flats, particularly in the Copenhagen area, of high merit, so much so that it was extremely difficult to select in the limited time available those of particular interest to repay further study.

It was decided to examine in some detail those schemes more especially containing tower or point blocks, but a number of other schemes were also visited. That at **Bellahøj,** by architects Eske Kristensen, Fink and others, is probably one of the foremost of the latest developments in Copenhagen and one of the best from all points of view seen during the tour.

It consists of a number of blocks varying from 8 storeys near to the main road adjoining the site to 11 and 13 storeys to the rear of the site, all of these being point blocks.

The typical plan of these blocks was a somewhat unusual arrangement of flats with four flats per floor, two of these being reached from the half-landing level of the staircase and two from full-landing level.

The layout gives a feeling of spaciousness, light and a complete sense of privacy to all the flats. The garden layout was of a particularly high standard. A kindergarten, shops, library and restaurant have been included in the scheme and a very unusually designed district heating plant, using fuel fed in from overhead magazines.

Three systems of construction have been used, that in the earlier stages being the Kallton, which is a Danish patent and utilises specially precast reinforced skeleton sections with an in-situ core. These blocks are not however as satisfactory in design as those subsequently erected, in part due to the rather poor yellow brick used for external infilling and of the somewhat unaesthetic timber penthouse storey derived from the traditional Danish house.

At a later stage blocks were erected by two alternative systems of sliding shuttering; one, a Danish system, utilises a series of hydraulic jacks operated from a central control panel, and the other is the Swedish system with independently controlled and manually operated jacks. In both cases concrete blocks are used for the outer skin to the wall and in-situ concrete poured to the inside face. Outside walls and cross walls are erected first over the full height of the building and the floors are poured as a subsequent stage, usually from the top downwards.

Both these systems appear to be extremely efficient and allowed construction at the rate of approximately one floor per week. Considerable care must be taken however to maintain verticality and there is the great disadvantage that at least one face of the concrete wall leaves the shuttering in a rough state necessitating considerable rendering and plastering.

In the majority of these buildings an aerated concrete block with Portland cement concrete face left smooth from a metal form was used for the outside walls. This, contrary to past experience, was extremely pleasing in appearance when relieved by the bright colours of the planting and by the profusion of growth in flower boxes. It has the advantage moreover of being almost completely self-cleansing and appeared to have excellent weathering qualities.

This scheme is being carried out by five of the large Danish building societies and a number of architects are also involved; but the development, in spite of slight variations in design between the various blocks, has been dealt with comprehensively and forms a most satisfactory and coherent whole. Notwithstanding the many flats in Copenhagen in form it represented a new departure. It was anticipated that somewhat higher costs than are normal might be encountered in providing accommodation initially in this new technique of construction and in the form of planning, but since the earlier stages, when many problems of this nature were dealt with, flats are now being constructed in this scheme at almost precisely the standard unit national cost and similar in cost to accommodation in lower blocks or smaller units in the more traditional forms of planning and construction.

At **Sondermarken,** a scheme by the same architects, Kristensen A/S Dominia was also nearing completion, and this consisted of five tower blocks 15 storeys in height with six flats per floor.

This site also gave a feeling of spaciousness, due entirely to the form of development and in spite of the fact that the towers were higher than at Bellahøj. Even without the garden work having been completed, and trees, which are a very necessary part of the planting, having been provided, this was a most attractive scheme.

The system of construction and finish were similar to that adopted at Bellahøj, with precast concrete slabs forming the external cladding and precast casing to the beams and columns, all of which were formed in steel shuttering with a consequent high finish.

The planning is extremely neat and compact, and circulation space reduced to a minimum. The somewhat irksome local fire regulations require naturally cross-ventilated lobbies to the main staircase, and this has the effect of increasing non-productive areas, which it was admitted could have been considerably reduced by the use of the internal staircase in the core of the plan. In spite of the escape requirements, however, planning six flats per floor is an achievement in economy and although the individual flats varied in aspect they all appeared to enjoy reasonably good conditions. Inevitably the open type of plan is used in the flats themselves, as also internal bathrooms and w.c.s.

The scheme provided for communal laundries with drying facilities on the ground floor of each of the blocks and an independent district heating scheme also designed to use solid fuel as at Bellahøj.

At **Højesøborg,** designed by architects Hoff and Windinge, a so-called 'collective house' was inspected, in which flats varying from one to three rooms were planned and tenants were able to obtain limited service. The typical floor contained the economical arrangement of six flats to the single staircase, and also included in the block were a number of communal rooms. Also by architect Kristensen was another scheme of 72 flats at **Gentofte,** and of a similar high standard of design, also by Kristensen, a scheme of 160 flats at **Solparken.** This cannot in any sense be an attempt to do full justice to the few schemes referred to, but to select a number which are typical of the very high standard of flat design and construction particularly since the war, and to give some indication of the system of layout and construction of these.

At **Brondbyøster,** a large development is being carried out by two housing associations, a part of which is designed by Professor Fisker and part by Gunnar Milthers. The scheme includes a number of 12- and 13-storey slab blocks with a cross-wall system of reinforced concrete construction and a considerable degree of prefabrication of the main structural elements other than the cross walls.

The whole of the planning has been based on a module with the result that standard shuttering panels were used for the wall construction which considerably simplified their erection and dismantling. The tower crane was an essential part of the operation, and it was interesting to learn for the first time of one of the serious disadvantages which occurs in the handling of large panelled sections—that of wind. Denmark is a country afflicted by strong winds, and on the day this site was visited work was completely at a standstill owing to the fact that the units were quite uncontrollable while being handled by the crane. Nevertheless, it appears that the cessation of work was a rare event, although obviously it is a factor to be reckoned with.

It was very noteworthy in this contract in particular and in so many other schemes visited, especially in Scandinavia, that pre-planning was not merely a blithe hope but a practical reality with the result that prefabrication could be carried to a high pitch of perfection involving almost engineering tolerances, and there was no subsequent cutting away or planning modifications leading to delays.

In some of the slab blocks, staircases took the form of detached spirals constructed in precast units and clad in a pleasing pattern of precast concrete blocks. All the concrete was of extremely high standard, and this was greatly assisted by the precasting under ideal conditions and in the use of large sections of bonded plywood as a facing to the shuttering units. Plastering or other types of finish were entirely unnecessary.

SWEDEN

There has been much research into the whole question of housing costs in Sweden and information has been published indicating typical figures not only for construction but also for what are known as Town Planning costs, these being obviously a most important and relevant factor in relation to much of the suburban or new town low-density type of development—and to a far lesser extent in high-density development too.

The figures relate to the year 1948, and these will have somewhat increased in the intervening period, although the basis of comparison is the same. These are:

Town Planning Costs £22 to £25 per room in multi-family buildings and £80 to £100 per room in small houses.

Building Costs £460 per room for multi-family dwellings and £370 per room for small houses.

There are wide variations in densities adopted in various developments which were under consideration, although appreciably higher densities than in this country predominated in the principal Swedish cities. It has been somewhat difficult to establish precise figures on our own basis of persons per acre, due to the use of the system involving the floor space index basis. As some guide, however, central area densities are reckoned on a floor space index of 1·54, which is regarded as the equivalent of about 300 persons per acre, and undoubtedly much of the development in the centre of Stockholm, for example, which from all points of view has provided extremely satisfactory housing, is at densities approaching this figure. Newer developments tend to show greater variations in density and particular attention was therefore paid to those parts of schemes either in the form of point blocks or high slab blocks where the special characteristics of high-density planning were most clearly exhibited.

Stockholm. As in Copenhagen, so much work of merit exists in the high-density housing sphere that the great difficulty is to know which schemes to exclude for purposes of the survey. Although **Danviksklippan**—a group of 9-storey tower blocks, designed by architects Backström and Reinius—was erected prior to the war, and is now almost a classic, it was deemed worthy of a visit as the forerunner, probably, of most of the present point block type of planning. The site is a rocky promontory, worthy of a school of architecture esquisse, adjoining Lake Mälaren, and although the site was favoured with an unrestricted view to the north, its layout is somewhat cramped. This is to some extent offset however by the interesting variations in level of each of the blocks which, as with the majority of buildings in and around Stockholm, are founded direct on the rock.

At the stage at which this scheme was designed it was evidently felt that some compromise with tradition was desirable, and the pitched roof therefore, more in keeping with the traditional Swedish small house, was included. This looks singularly out of keeping on what is otherwise a simple and functional design and has robbed the tenants of a magnificent vantage-point with a view over the city. It is noticeable that although the pitched roof persisted for some time, it has now finally lost favour, and later schemes, almost without exception, are planned with the flat roof.

Danviksklippan was certainly one of the first schemes embodying the point block with the main staircase planned together, with the lift in the core of the block and with the flats arranged around the perimeter. There was no secondary staircase, but instead a high standard of fire-resisting construction was adopted, and this system has since been very widely used. The only criticism that might be made of the planning is that the staircase is roughly semi-circular in shape and all the stairs are winders. They are extremely narrow and even dangerous for children in some places. This difficulty has however been overcome in other schemes by the adoption of a central well in reinforced concrete and the use of a wider radius.

Five flats per floor are planned in the blocks, which is an economical arrangement and was undoubtedly a great advance in its time on earlier forms of high-density planning. In spite of the close spacing of the blocks there is no feeling of loss of privacy and a great deal more space around the buildings is possible than could have been the case with an equivalent number of flats in slab blocks. Moreover there is no sense of enclosure, and from all points on the estate there are uninterrupted views through to the lake. On the typical floor four flats contain three rooms and a kitchen and one one room and a kitchen. Internal bathrooms and w.c.s are a feature of the planning, as with most other schemes of the type subsequently carried out.

Construction was in-situ reinforced concrete utilising the climbing shuttering which is now used practically universally in Scandinavia.

At **Reimersholm** another interesting scheme designed by architect Wallinder for the H.S.B., one of the very large building societies, was erected between 1942 and 1946, with a total of just under nine hundred flats, entirely in the form of point blocks. This is on a rocky island site near the centre of the city, and one which from a planning point of view obviously created considerable difficulties owing to the undulating nature of the terrain. The layout is however entirely satisfactory, and as with Danviksklippan the uneven nature of the ground has produced a more interesting scheme. The blocks are of two types, one of which contains six flats per floor and the other eight flats per floor, with, in each case, flats having balconies with a south aspect. This wedge-type plan is one which is also becoming extremely popular due to the economical form of planning possible.

As in the majority of these schemes the construction is in-situ reinforced concrete, and the external finish cement rendering treated in a variety of colours—although it must be remarked that these were too often rather simple earth colours which were somewhat depressing in appearance.

Included in the development is a crèche, hobby rooms, and also a day nursery, which have been accommodated in a fine example of a traditional Swedish house which existed on the site and was preserved for this purpose.

The flats are owned by the tenants, who purchase on an instalment basis rather than the more normal arrangement of paying rent to the landlord or building society. This is a very prevalent arrangement in Scandinavia.

At **Kärrtorp** extensive housing development has been undertaken by Svensk Bostäder, the large building society who are also concerned with the development at Vällingby. The chief architect is Hjalmar Klemming, who is responsible for some of the best work that is being undertaken in Sweden today. Kärrtorp is an area about ten miles south of Stockholm and is the most important of a number of adjoining housing areas which will ultimately be linked up with the southern extension of the new underground railway. The site is rocky and very largely covered by pine woods, and these natural features have been preserved wherever possible. The planning is free and open and owes little to geometrical pattern and in consequence maximum possible amenity effect has been created by the garden spaces which

result—or, as they may more properly be termed, the 'open air room'. There is none of the dull uniformity and monotony from the repetition of small units which we see in so much of our own new town development, and although the accommodation is almost entirely in the form of flats, these follow the contours and the ground formation in a way that permits of moderate densities being adopted, but at the same time the minimum of interference with open space areas. Once again it is a demonstration of the practical advantages of the communal garden and the absence of the traditional garden fence with which we are so familiar—and, once again too, no one could suggest that there is any less freedom for relaxation for families with children or, in fact, any less privacy than the suburban dweller has in his little garden plot.

Three- or 4-storey continuous terrace blocks predominate, but these are accessible from both sides and have little of the objection which so often is levelled at this type of planning. At focal points 7-, 8- and 14-storey tower blocks have been erected in such a way as not to obtrude but to permit of some relief and height contrast with the terrace blocks, and at the same time provide dramatic centres of interest. There had been as little interference as possible with the existing site conditions in these areas as elsewhere on the estate, and advantage taken of a number of fully-grown conifers to provide the necessary foil to the building.

The whole scheme was colourful and imaginative, and a model of how development of this kind may be carried out on the basis of a freer type of layout.

Vällingby is the most important development now taking place in Sweden, and although in many ways analogous to our new towns differs fundamentally in various aspects. There is far greater flexibility in the standard and type of housing design adopted, and although seen in an unfinished state it is clearly a very fine achievement in townscape, which so far is lacking in many of the new towns.

This sense of town planning cohesion and enclosure is very largely the result of grouping of higher density buildings not only in the main centre of Vällingby but also at a number of subsidiary focal points. Even in areas where lower densities predominate the layout and arrangement of the blocks has been so adroitly handled that there is a multiplicity of interesting vistas and a complete absence of that atmosphere of the 'suburban graveyard'. It is true that the geometrical features of the site are such that an interesting layout was made possible, but it is the way in which these features have been used that is so noteworthy.

Vällingby, together with Rackstå, Blackeberg and Hässelby, is intended ultimately to house some 60,000 people, and the north-western extension of the underground railway has been built specially to serve this area. The town centre is grouped round the railway station, which comes in underground and also has a number of spurs into the basements of the commercial buildings for the purpose of delivery of goods. Surface transport of all types has been severely discouraged in the town centre in order that it should become a pedestrian preserve.

Grouped around the centre are a number of tower blocks in a variety of designs and the responsibility of more than one architect. Beyond these are groups of continuous terrace housing following the contours and ground configurations wherever possible, very much in the Kärrtorp pattern, and then still farther out are the single family houses, either in groups of detached units or in some cases the most attractively designed terraces.

Of the two types of tower block designed by Klemming, the one with projecting balconies which are linked with tubular steel supports is planned with a central circular staircase with access to two flats at half-landing level and four at full-landing level; two of these are small bed-sitters; two are bed-sitters which can be subdivided, and in addition there are two 2-room flats. In the other type of plan, which is somewhat akin to the swastika shape, there is also a central circular staircase and lift enclosure with three flats entered at half-landing level and two at full-landing level. Of these, one is a small bed-sitter, one a large bed-sitter that can be divided off into two separate rooms, and three are 2-room flats. Provision is made for large studio flats on the uppermost floor.

A third type of block is also under construction containing eight flats to the typical floor, four of which are bed-sitters and four 3-room accommodation. This is an extremely ingenious and economical plan, and provides all the larger flats with double aspect, with living rooms facing east or west. Again the staircase and lifts are contained in the core of the plan and all bathrooms and w.c.s planned internally and artificially ventilated.

This block was constructed with a system of reinforced concrete cross walls poured in-situ and the finish, obtained with the use of special bonded plywood shuttering, was so good that it had been possible to paper direct on to it without a plaster finish. Partitioning was being carried out in a form of cellular building board with a straw core to it, and thus all plastering inside the building had been entirely eliminated.

In the **Rackstå** area blocks designed by architects Ancker, Gate and Lindegren were somewhat similar in their planning to the square block at Vällingby, although in this instance balconies were recessed within the limitations of the main structure. The typical floor contained four flats, all of which were 2-room accommodation, and access was by means of the circular staircase planned round a central lift well. Construction was also in poured in-situ concrete with precast concrete facing slabs used as external lining to the shuttering.

In the **Blackeberg** area were two blocks designed by the architects for H.S.B., in this case with the stepped type of wedge plan and a rectangular staircase in the centre of the block. This contained six flats per floor of which two were 3-room, two 2-room, and two bed-sitters. Projecting balconies had been arranged to give the additional benefit of the southern aspect to each of the flats, although the shape and design of the building was not as pleasing as the simpler rectangular plan.

At **Västertorp** a group of 9-storey tower blocks similar in design to those at Danviksklippan has been erected, and these are typical of many similar developments in other areas including Solberga, particularly in the southern outskirts of the city of Stockholm.

Although serving a special purpose, the 18-storey nurses' home, adjoining the Southern Hospital which overlooks Lake Mälaren, was of considerable interest both in regard to construction and design. It is significant that it has been designed by an architect, although the hospital itself was designed by an engineer, and there is no doubt that it is a most successful scheme.

NORWAY

Oslo. Owing to the geographical considerations imposed by the limited areas of more or less level ground available within the surrounding ring of hills, there is only a restricted building space available in the city, and it has been found, particularly of late, desirable to develop this to the maximum advantage.

This has led over a period of years to the familiar pattern of intensive urban building in the central areas with the outermost fringes developed just prior to the war in part with closely spaced slab blocks somewhat monotonous in appearance, and not in accordance with the latest planning thought.

Since the war attempts have been made to break away from this uniform and rather monotonous type of development and to obtain a greater variety of housing and flat types by interspersing a proportion of high-density blocks, including point blocks, in a more moderate density development. A good example of this is that of the four tower blocks at **Etterstad**, designed in conjunction with 3- and 4-storey slab blocks, although in this earlier venture there was still little appreciation of the need to design the enclosed garden spaces between buildings, and a rather formal geometrical pattern was superimposed which still appears somewhat monotonous. Unfortunately, too, landscaping has not yet been fully developed.

In the centre of the city a group of 9-storey reinforced concrete tower blocks is at present under construction, in design very similar to the type of planning which now predominates in Sweden. By means of this system of planning it has been possible in this instance to use a relatively difficult site, and, although it is fairly intensively developed, at the same time give an impression of spaciousness and interest.

As a further indication of the direction in which flat planning is proceeding in Oslo, the 15-storey tower block forming a part of the scheme known as **The Hoff** was also of particular interest. Although externally this block is somewhat unusual in

appearance, having made concessions to tradition by the use of a rather extraordinary type of pitched roof, the planning is ingenious with six flats to the typical floor, each of which has at least one window to the principal habitable room with a southern aspect, and the whole of the accommodation served by one main staircase and a pair of lifts. In spite of the rather spacious circulation area, the plan is undoubtedly an economical one, and the block as a whole forms a strong climax to a scheme which would otherwise have been extremely dull, consisting of entirely orthodox 4-storey slab blocks with staircase access planning.

The other feature of this latter scheme which was also of interest was the miniature Norwegian farm designed specially to cater for children. Children's houses are included in the planning of many of the current housing schemes in Norway, and this form was in many ways the most attractive variation of this idea, which is so much preferable to the rather unimaginative asphalt playground with the odd piece of standardised equipment so frequently appearing in this country.

Outside the city proper a new area at **Lamberseter,** which is predominantly planned in 3- and 4-storey blocks, includes in the centre a point block on the typical lines of the Swedish point house, with the central semicircular staircase and four flats per floor, two of which are 2-room and two 3-room. The structure is also in this instance in in-situ reinforced concrete, and was erected by means of the sliding shuttering system already referred to.

A similar type of block is also planned for **Manglerud,** in this instance with six flats per floor and 12 storeys; the architects, as at Lamberseter, being Rinnand and Colbiørnson on behalf of OBOS, the largest building society in Norway, who have initiated so much of the housing development in Oslo.

In the absence of complete details and information, which in many cases is still being sought, a number of the schemes which have been illustrated or referred to have been dealt with somewhat superficially. It is hoped however that such information as has been provided is an indication of the extremely interesting housing work at present proceeding in the many continental countries today, and will serve to show not only the trend of planning and architectural design abroad, but in all probability the shape of things to come in this country in the not too distant future.

Convincing arguments can be adduced to show that given suitable organisation in the building industry, both on the contractual and professional sides, the adoption of new and better constructional techniques which are already available, the streamlining of administrative and bureaucratic arrangements to permit of far more devolution of responsibility, the drastic revision of building bye-laws where these can be clearly shown to be adding unnecessarily to costs by obsolete requirements, and the greater use of standardisation of building components and planning, flat construction in this country, more especially in high blocks, can be provided at costs no higher than that of small houses, if in all stages the prime need to relate ideals to the economic yardstick is borne in mind.

There has in the past been a great deal of misleading information produced with regard to comparative costs of low building and of high blocks of flats, with the sole purpose it appears of influencing a national planning policy. With present-day overwhelming problems of overspill and even more overwhelming arguments in favour of building higher in central areas, it is essential that this question should be put into proper perspective. Many other European countries are years in advance of us not only in regard to schemes physically planned and constructed but also in relation to research on the economics and planning of higher flat buildings, and it is urgently necessary that a fuller understanding of this question be reached in this country lest planning policy should make irreparable mistakes. If the steps referred to can be taken and the full financial picture, including town planning costs, be shown, then there is no question that high flat building in this country is not only desirable but practicable at no higher cost.

Part II of the Rose Shipman Studentship will appear in the October issue of the JOURNAL *and will consist of some preliminary conclusions; tabular information on costs and densities, and a selection of plans and photographs.*

Meeting of I.U.A. Committees in Poland

A MEETING of rapporteurs and members of the Congress Committee of the International Union of Architects was recently held in Poland. At the same time a meeting of the Town Planning Committee took place, and together they made detailed arrangements for the Congress in Moscow next year. The following report has been made by Arthur Ling [*F*], who attended as a rapporteur and as a member of the Town Planning Committee.

. . .

Our hosts, the Polish Society of Architects, were most generous in their hospitality and the time they gave to ensuring the success of the meetings. They had arranged for these to be held in various towns and cities in Poland so that the delegates could see what progress had been made in reconstruction throughout the country. Thirty-three architects participated, representing the sections of the I.U.A. in Belgium, Bulgaria, China, Chile, Czechoslovakia, France, East Germany, Great Britain, Holland, Poland, Spain, Sweden and Switzerland. Pierre Vago, Secretary of I.U.A., was there of course to see that proceedings in committees moved as quickly as possible to a sensible conclusion.

After our first meeting in Warsaw and a tour through the city during which a new stadium for 80,000 spectators left the greatest impression, we spent a day at Kazimierz, an ancient market town on the banks of the Vistula about 90 miles from the capital. It had been reconstructed after considerable war damage and one of the buildings in the market square had been built as an architects' club where architects could spend a short holiday, bringing their families if they wished, or alternatively find a quiet retreat from metropolitan activity for study or conferences. The charge was 30 zlotis for each person per day, which seemed very low in cost compared with prices generally. The club was our meeting-place for the day.

Back in Warsaw at nine o'clock the next morning I delivered a message of greetings from the Lord Mayor of Coventry to the President of the Warsaw Council and over coffee and strawberries talked with him and two architect members of the Council, Sygalim and Cybarowski, about reconstruction problems. The rest of the day was filled with committee meetings, a visit to new residential districts and a violent storm, during which we discovered that it was impossible to get from our coach to the 300 ft. high Palace of Science and Culture in the dry, so our enthusiasm for monumental approaches was considerably dampened.

The following day, after resolving our differences on one of the committees by forming a sub-committee, and refreshed by Chopin and Debussy at an evening concert, we left by the night train for Stalinograd in Upper Silesia. This city faces the problem of reconstruction and expansion in an area which is very rich in coal. It is being solved by the building of several new towns outside the main mining areas. We saw two of these —Gulonow and Novo Tychy. The first has a site with a hill at its centre—an unusual feature in the Polish landscape—and opinions were freely given to the Polish architects on how to design the town, one suggestion being to build a hill-top town with point blocks—a contemporary San Gimignano. Considering plans had already been approved and construction started they took it in very good spirit.

We found Polish architects very critical of their work over the past five years and anxious to have our views and hear about our problems and experiences. The other new town, Novo Tychy, was interesting because of the attempt being made to introduce greater informality into the layout and at the same time to use pre-

View of Warsaw from the Praga. The tall block is the Palace of Science and Culture

fabricated methods for the construction of flats.

In between the visits to the new towns we went to the Park of Rest and Culture where an enormous stadium was under construction and a planetarium and observatory was complete. I had not previously experienced in armchair comfort the absorbing delights of the heavens at night.

We left by coach for Cracow and after more committee meetings escaped to see some of the city's ancient monuments. The famous altar of Wit Stwosz was on exhibition in the Wawel. It had been beautifully restored in its original colours, only discovered as a result of war damage, but it had not yet been decided whether it should be reassembled as a complete altar. To my mind it was so much better to be able to see its beauty in detail.

The new town of Nowa Huta provided a marked contrast to the mediaeval city. It was being built eight miles outside the city for the workers in the new steel works, which were designed by Soviet engineers and architects. The layout of the town itself is formal, with main avenues leading to a civic centre and one of them leading outwards to the steelworks. These were impressive where functional but disturbing where an attempt had been made to give them a classical guise. Automation in the rolling mills seems almost complete. I only counted about ten men in a building which took us several minutes to walk from one end to the other as great lumps of molten metal were being pounded, squeezed through rollers and manœuvred from one machine to another. The town itself was disappointing, mainly because of a decision which was taken several years ago (applied to building in Poland generally) to defer the external rendering of buildings and the landscaping in order to free labour to provide housing and other accommodation more quickly. The result of this policy was that so far as Nowa Huta was concerned the town presented itself as a mass of unsightly rough red brickwork which gave no indication of the thought that had been given to the final design of the buildings. Fortunately this policy has now been abandoned and buildings are to be finished off as they are constructed. It was an understandable deferment in view of the serious housing shortage but it now means that scaffolding is to be re-erected wherever buildings have been left in the rough.

The Polish architects went out of their way to show us an earlier section of the town where the layout of the town had not been influenced by Government town planning and economic regulations adopted about five years ago. We shared their preference for this more informal approach and they were interested in the method of control of our Ministry of Education over school building whereby freedom of design is allowed to architects within an overall cost per place. They felt that the control they had suffered under was too bureaucratic—a fault which the Government now recognised—and not only in the field of architecture. In many offices we visited there were posters on the walls making fun of bureaucrats.

After a puppet show and masked satire at the Theatre Groteska we left Cracow by the night train for Warsaw, where we had a final round of committee meetings and a reception by the Society of Polish Architects at which representatives from most countries present vied with each other in different languages to express their thanks to the Polish architects for their hospitality and to drink their health; quite forgetting about the Government's campaign against alcohol!

Almost before we had time to collect our thoughts we found ourselves at the airport early next morning, and flying westwards we passed over the International Trade Fair at Poznan as we came down to take up the French Ambassador and some big business men.

The impression that remains with me apart from the friendliness of our hosts and the enormous extent of the country's building activity is the changed atmosphere in the Polish architectural profession. A free and open discussion is taking place. Everything that has been accomplished during the last five years is being subjected to a most searching criticism and the validity of a socialist realist policy is being questioned, not because of its socialism but because it had become a formalist straitjacket preventing architects from making full use of their creative abilities. Plans now emerging begin to show a break from the rigid ideas of these past five years and a desire to learn more about what is being done in other parts of the world.

The Congress. The essential information about the Congress which emerges from the meetings is as follows: it will be held in Moscow from 18–25 August 1957, after which arrangements have been made for tours to Stalingrad, Kiev and Leningrad for

SUBJECT	PRESIDENT VICE-PRESIDENT	RAPPORTEURS
1	*President* Mardones-Restat (Chile) *Vice-Presidents* Prof. Holford (United Kingdom) Prof. Piccinato (Italy)	Shkvarikov (U.S.S.R.) for Eastern Europe Van Esteren (Holland) for Western Europe A. Ling (United Kingdom) for Western Europe Hoa (China) for Eastern Asia Churchill (U.S.A.) for America
2(*a*)	*President* (*a*) Gutton (France) *Vice-President* Skibnevsky (Poland)	Tonev (Bulgaria) Larrain (Chile) Hillebrecht (G.F.R.)
2(*b*)	*President* (*b*) Hedquist (Sweden) *Vice-President* Sorreghi (Cuba)	Alabyan (U.S.S.R.) Fayeton (France) ..... (U.S.A.)

Table I. Structure of the Sessions

those wishing to spend longer in the Soviet Union. The main theme of the Congress is 'Construction and Reconstruction of Cities and Towns 1945–1957'. In order to ensure a useful exchange of views the following two main aspects only will be dealt with:

1. The Plan: its functional and aesthetic aspects.
2. Its realisation: (*a*) legislative, economic and social aspects; (*b*) technical problems and industrialisation of buildings.

From information supplied by national sections the rapporteurs appointed by the Executive Committee will present reports to the Congress, drawing their own conclusions and expressing individual views. As regards the first aspect (the plan), the reports will be the subject of discussion at two plenary sessions of the Congress after the rapporteurs have introduced their reports. There will be no discussion on the second aspect (its realisation). The reports, which have to be submitted by 15 April 1957, will be printed before the Congress and sent to all participants.

Each national section has been invited to send answers (with illustrative material) to a questionnaire before 1 December 1956, selecting as examples not more than six characteristic towns covering: New Towns, Rebuilt Towns and Reconstructed Towns. (Theoretical plans are not acceptable.) The answers will be published by the Soviet Section of the I.U.A. in a book.

In addition an exhibition to illustrate the theme of the Congress is to be arranged and each section is asked to submit material on the selected towns in the form of exhibition panels (1 × 1m). The presentation of plans both for the exhibition and illustrations to the report must follow the notation adopted by the Town Planning Commission of the I.U.A. The Exhibition material should be submitted before 31 May 1957.

The United Kingdom Section has selected London, Harlow and Coventry for presentation.

The structure of the sessions will be as set out in Table I.

Town Planning Committee. As regards the meeting of the Town Planning Committee, decisions were taken on the final form of the international town planning notation. There was a discussion on the situation as regards town planning in various countries; so far reports had been received only from France, Great Britain and Sweden and all the other sections are to be asked to send in a report before 1 January 1957. A new enquiry is to be undertaken on the problem of car parking and each national section will shortly be receiving a questionnaire on this subject. It is felt that the vast increase in the number of private cars has led to a demand for much more extensive car-parking facilities in towns and has initiated a radical rethinking of the problem of segregation of traffic and pedestrian movement in urban areas. Many cities and towns throughout the world are faced with similar problems and the Town Planning Committee consider that a useful task would be performed if information was collected from various parts of the world so that it could be made available to each national section.

In addition it was decided to prepare an international vocabulary of technical terms relating to town planning and a rapporteur was appointed.

Lastly, the question of forming a separate section of architect-planners in the Union was discussed.

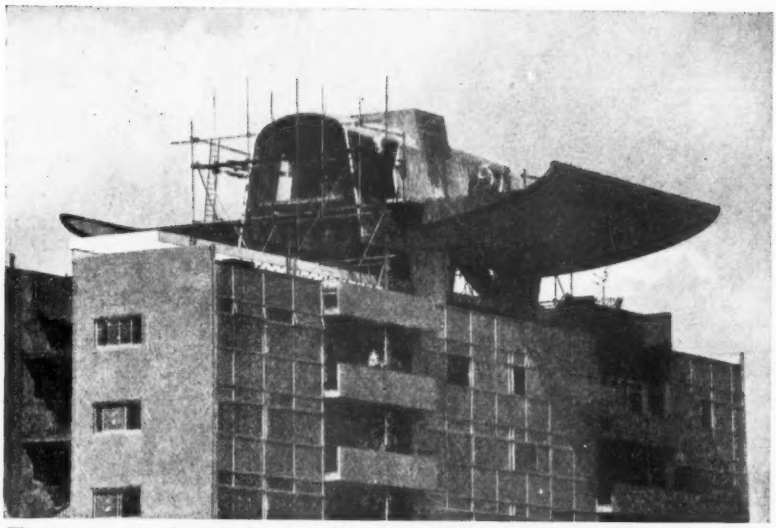
Tenth CIAM Congress

The following report has been received from Mr. Alfred Roth (1st Delegate CIAM Swiss Group) on behalf of International Congresses for Modern Architecture.

The Tenth Congress of CIAM took place in Dubrovnik from 3 to 13 August 1956, under the presidency of J. L. Sert (Harvard University). It was a working congress to which only members of the CIAM Groups were admitted. The participants came from 15 European, American and Asiatic countries. As a basis for the discussions 35 'grilles' (standardised sets of exhibition panels) had been prepared by the Groups. From this material and in view of the present uncertain position towards the future form of urban housing and the form of urban development an outline was drawn up for a statement on the Human Habitat. This concerned the present lack of clarity and the many-sided relations between the city and its various parts and elements as well as between rural land and urban landscape and the lines upon which their present lack of inner relationship could be rectified.

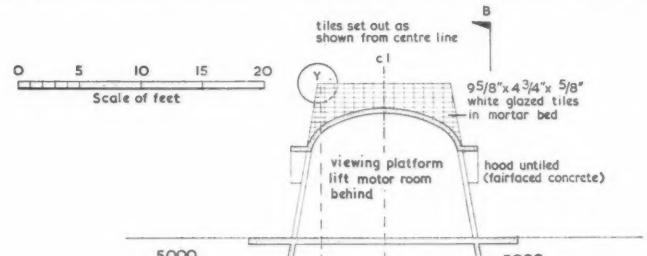
Another task of the Tenth CIAM Congress was the revision of its own structural organisation. Those who had led CIAM from its beginnings (1928) demanded that its direction should pass into the hands of a younger generation. The final preparation of the statement on the Human Habitat as well as the ensuing publication, which will contain references to the work of CIAM over the last quarter of a century, remains in the hands of the retiring leaders, who include among their number Le Corbusier, W. Gropius, J. L. Sert and S. Giedion.

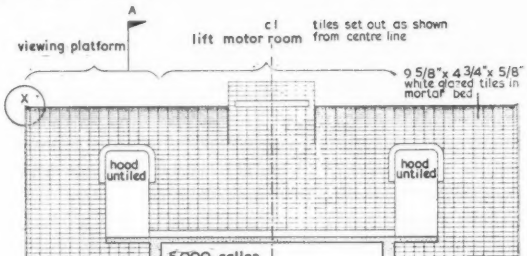
As a large number of CIAM members are now teaching in schools of architecture throughout the world it was decided that they should keep in touch with one another to exchange information on teaching methods, etc., possibly leading to a sponsored exchange of students and even faculty.

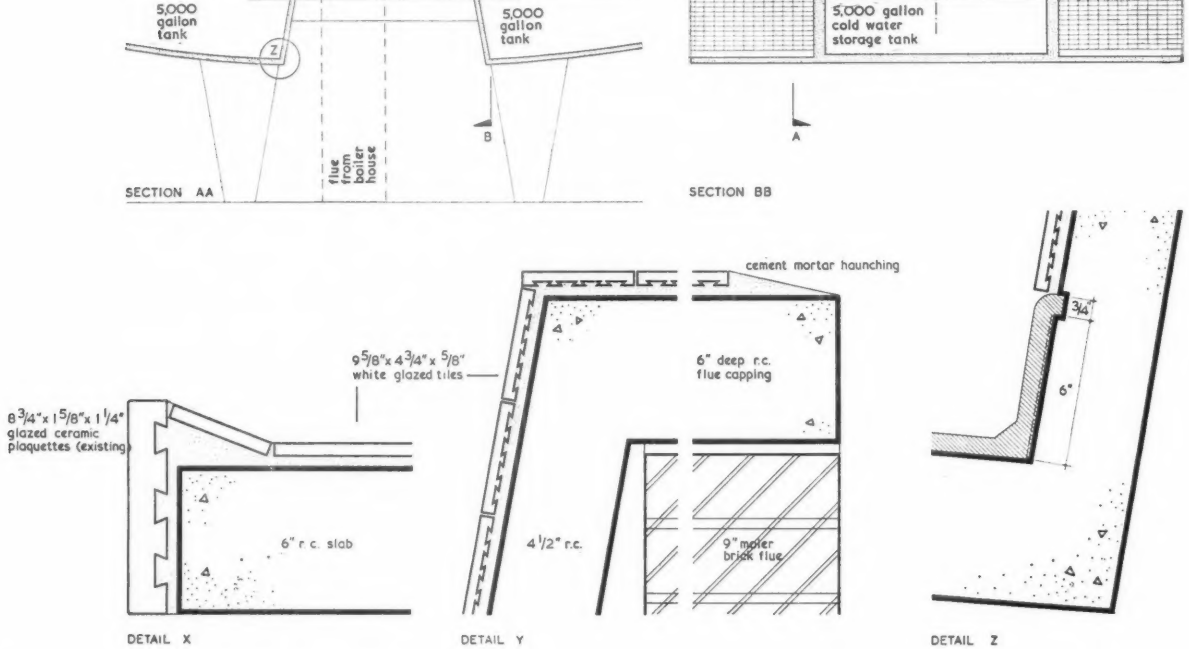


The two progress photographs of the high block of flats, Golden Lane Housing Scheme, show how the architects, Messrs. Chamberlin, Powell and Bon [*AA*] have integrated the top-hamper into a strongly sculptural form which adds great interest to the building. The feature houses the lift motor room, with viewing platforms, and two 5,000 gallon water storage tanks (see explanatory drawing below).

Superstructure, Golden Lane Housing Scheme

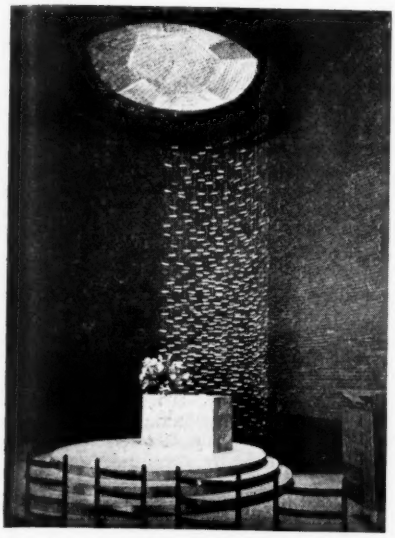






Lighting of Buildings—Training and Practice*

By Derek Phillips, M.Arch. (M.I.T.), M.C.D., B.Arch.(L'pool) [*A*]



Chapel at Massachusetts Institute of Technology. Architect: Eero Saarinen. Sculptor: Harry Bertoia. 'There are occasions when the more practical aspects of a building become second in importance to the purely formal qualities, when light may be used to assist in modelling a space to create positive impressions for functional or "aesthetic" reasons.'

FEW WILL QUARREL with the premise that a building in which the artificial illumination is a positive contribution to the architectural unity depends almost entirely on good co-operation between the architect and the lighting engineer. The fact that such buildings are the exception rather than the rule suggests that the relationship existing between the two fields is unsatisfactory. It might not be overstating the case to say that there is an almost traditional animosity between the architect and the lighting engineer, a situation which is unlikely to lead to results in which imagination is reinforced by sound engineering practice to produce solutions of quality. It is the aim of this paper to examine the training and practice leading to lighting in buildings in order to try to identify any faults which exist and which are thought to be responsible for the present lack of understanding on the part of both architects and lighting engineers of each other's approach. Suggestions are then offered in the hope that they may lead to what the author considers to be a more profitable relationship.

Training. The basis of a profession lies in the training of its students; it is therefore useful to make a brief analysis of the educational facilities offered to the students of architecture and lighting engineering, to see to what extent their training assists them in dealing with the overall problems of lighting in actual building programmes.

* Read at a Joint Meeting of the R.I.B.A. and the Illuminating Engineering Society, 13 December 1955.

The Architect's Training. The R.I.B.A. examinations tend to dictate the direction of the architectural schools, so an analysis of the R.I.B.A. Intermediate and Final examinations, together with the published advice to students, should give a general picture of the academic requirements which a student must satisfy before attaining his associateship and subsequent practice. It must be stated however that only those students not at recognised schools of architecture actually sit for these 'external' examinations, and that differences between the policy of the Board of Architectural Education and of certain of the recognised schools exist and will become clear later.

In the above examinations lighting is considered as 'servicing' under the general heading of 'Hygiene and Specialised Requirements of Buildings' together with plumbing, water supply, drainage and other services, and in the published instructions to candidates lighting is defined as consisting of: 'Natural lighting, measurement of illumination, orientation, artificial lighting, general requirements of installations and suitability of different methods of lighting for their respective purposes.' However, this syllabus has not been implemented by any examination questions in lighting for some years. The examinations are backed up by design work, in the form of solutions to set architectural programmes, and it is in these designs that evidence of a knowledge of lighting should appear.

Since becoming interested in this problem, I have studied the work of students in their final and post-graduate years, here and in the States, and the student who has any clear idea of lighting requirements is a rarity. On being asked what provision has been made for the artificial lighting, such remarks as 'Oh, I suppose that will be taken care of later' are not uncommon. On the other hand natural lighting is rather more fully integrated into the architectural curriculum, reflecting the professional attitude that designing for daylight has been appreciated by the architectural profession for generations, whilst the more modern concepts of artificial lighting for use at night are less fully understood.

One further guide to the training of architects is the list of books published for the use of candidates. No books on lighting are recommended for the intermediate examination or for the first three years of training, whilst for the Finals no books on lighting design are included under the heading of 'Contemporary Architectural Design', although this section includes three books on acoustics. Under the heading of 'Hygiene and Special Requirements in Buildings' two books are listed—*The Science of Artificial Lighting*, by R. O. Ackerley, and *The Lighting of Buildings* (P.W.B.S. No. 12).

That no book on lighting design has been included is perhaps an indication of a poverty of literature on this subject, but it also indicates that the design is considered less important than the purely engineering side of lighting.

In contrast to the Board of Architectural Education, a few of the recognised schools of architecture have realised the need for an organised course in illumination and lectures in natural and artificial lighting have been arranged which are already having an effect upon the design work of students, questions in lighting being set in the school examinations.

To some extent the greater flexibility existing in American schools, which allows, and sometimes insists, that students of architecture 'elect' subjects in the graduate and undergraduate years from the other related faculties, assists the student to attend courses in illuminating engineering.

The approach of the majority of schools in this country is summed up by the following extract from a letter in which a school writes: 'that neither artificial nor natural lighting is dealt with very fully. . . . In view of the difficulty of fitting everything else into the course we regard lighting as one of those matters which can be looked into if the need arises.' In general there is a willingness on the part of a few schools to consider the question of lighting as a part of their syllabus, but this is seldom implemented owing to the lack of teachers and the fact that the Board of Architectural Education seems unable either to encourage their supply or to force the pace in any other way.

The Lighting Engineer's Training. In a similar manner to the R.I.B.A., the Illuminating Engineering Society sets the standard of training of the lighting engineer, by means of the City and Guilds examinations in Illuminating Engineering. An analysis of the syllabus for these examinations shows that the training is biased towards a scientific and theoretical approach to lighting, man being considered from the scientific viewpoint. No architectural instruction is included in the syllabus, although the term 'architectural lighting' is used. This does not refer to the lighting of architecture, but rather to a curious misuse of the words to denote any lighting of which the chief characteristic is its inefficiency. Reference to the past year's course at one of the best-known schools shows that no lectures were given by architects who could put over the importance of the architectural approach.

Reference to 1954–1955 examination papers illustrates the importance that is attached to the purely physical aspects of lighting at the expense of the practical and aesthetic requirements of man and of architecture. The intermediate examination is divided into two parts, consisting of nine questions each, five to be answered in each

Library at Woodlands School, Tile Hill, Coventry. 'All lighting equipment itself, whether a decorative chandelier, or some form of lighting closely integrated with the structure, has its own formal quality over and above the functional lighting job that it is called upon to perform'

Fitchburg Library. Massachusetts. Architect: Carl Koch. Installation by Martin Electric. 'Artificial lighting will be developing within the next decade into something which we can only begin to foresee, and it is essential that its potentialities should be integrated with architectural concepts' (*Photo: Ezra Stoller, N.Y.*)

paper. Of these, sixteen are concerned with the physical properties of lighting, one is concerned with vision and one with the lighting of a building, the latter being framed in a manner which ignores its structure and character. The final examination is divided into three parts, of which only two are compulsory, the second part being largely for the specialist in photometry. Of the twenty-four questions set, only ten have therefore to be answered; of these twenty-four, twenty are concerned with the physical aspects of lighting, two with vision and the lighting of specialised tasks, and there are two which recognise that lighting can be part of a building. One deals with internal and one with external lighting.

It is therefore possible for students to complete the course for the City and Guilds examinations and obtain 100 per cent marks without having any knowledge of the buildings for which, as lighting engineers, they will be planning lighting schemes. Further, it is possible to obtain 100 per cent marks without answering any questions about man. In effect, the examinations can be regarded as being solely theoretical and applied physics, in which all the physiological problems involved with man and the technical and aesthetic problems involved with architecture can be ignored.

It can I think be assumed from the preceding analysis of the training in the two fields, that it will result in each knowing very little about the work of the other, and it is thought that this lack of information is responsible for the lack of co-operation between the professions, resulting in buildings marred by unrelated lighting schemes, caused by a misunderstanding of the problems.

Recommended Training. In simple terms, the subjects about which knowledge is necessary for the design of lighting in buildings are Man, Light and Architecture.

Generalising about each of these in turn, it may be said that the architect appreciates man's aesthetic needs in terms of lighting, whilst the lighting engineer takes a scientific view; the architect has a layman's attitude towards light, whilst the engineer has a scientific and technical knowledge of it; and finally the architect is concerned with architecture as an art and a science, having a technical understanding of its difficulties, the engineer's interest being restricted to the technical problems involved.

This being the case, the only common meeting-ground is in the technical problems involved in relating lighting equipment to buildings, and there is an obvious necessity for each to find out more about these three subjects from the other person's point of view. The lack of a common vocabulary is often deprecated by architects, but this is the obvious result of entirely different approaches to the same subjects. It is only when the borders are crossed and the gaps existing in our knowledge of each other closed, that a common vocabulary dealing with man from a scientific and aesthetic viewpoint and with light and architecture in all their aspects will be established.

The Architect. Any additions to the already overloaded syllabus of the architectural student must be carefully considered, since they can be made only at the expense of certain other subjects. However, in any reorganisation of the architectural syllabus those aspects which are fundamental to design must be included. Where lighting has been considered in the architectural syllabus, it has been considered, as we have seen, as servicing, in the same manner as heating and ventilation, or acoustics. Thus

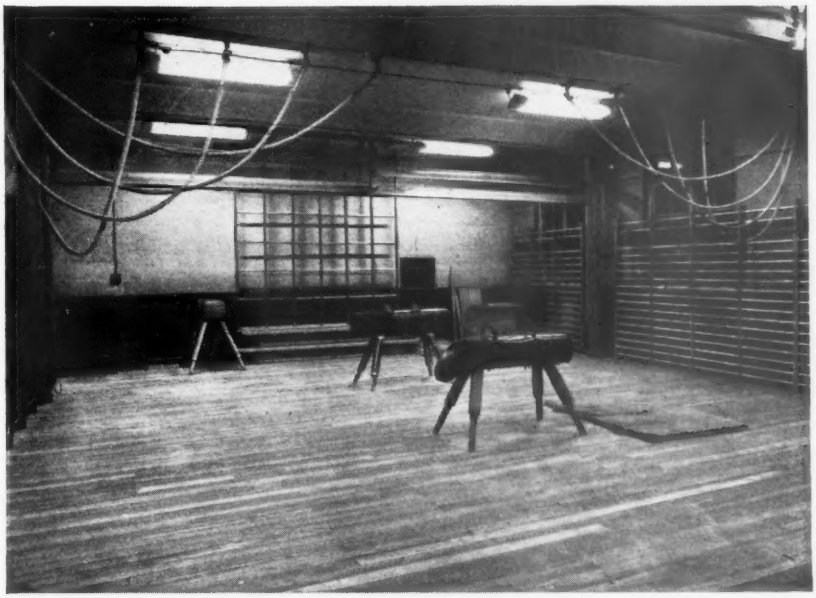
treated, the subject seems to have two aspects: (*a*) The engineering aspects of light intensities, economics, supply and distribution; (*b*) the 'formal' qualities of light.

In general there may be more overriding considerations of planning, structure, and economics which will dictate the form of the building; but there are occasions when these more practical aspects of a building become second in importance to the purely formal qualities, when light may be used to assist in modelling a space, to create positive impressions for functional or aesthetic reasons. In such cases as this the structure may be modified to accept light in a specific manner to gain an architectural effect; similarly, all lighting equipment itself, whether a decorative chandelier, or some form of lighting closely integrated with the structure, has its own formal quality over and above the functional lighting job that it is called upon to perform. Sometimes this formal quality is exploited and sometimes it is played down, but it can never be ignored in the same way that the ductwork and pipes of normal servicing are generally hidden. Clearly the word 'servicing' must allow of considerable freedom if it is to absorb all aspects of lighting in buildings.

Nor can lighting design be studied in isolation, for although there is no architecture without light, it is equally true to say that there is no lighting in buildings without the surfaces and edges of the materials of which they are made. The study of lighting must relate light to materials, colour and those other elements of design, such as structure, with which the architect is concerned. This must be closely integrated with design courses throughout the student's training, and should not be restricted to a single course in a particular year. It requires a consciousness on the part of the staff, at all times, of the importance of lighting. The student should be taught to observe the effects which can be achieved with light, its qualities of unification and disintegration, of modelling and shadow, so that by the end of his training he thinks in terms of the lit appearance of his building and not only in the paper proportions of his drawing board.

The architect's training is already directed towards an appreciation of man's aesthetic needs and the psychological values implicit in his design, so that it is in the more scientific problems related to man that his training needs to be supplemented.

As Gropius has said[1]: 'We have to study man's biological way of life, his way of seeing, his perception of distance, in order to grasp what scale will fit him. Buildings must serve his emotional needs, not dictate to him.' To this end I would suggest under the subject of Man, a shortened course of study along the lines of the City and Guilds Final Grade syllabus, covering aspects of the eye and vision in a manner sufficient to meet the need of the architect. This would include the following: (*a*) The physiology of the eye. (*b*) Theories of vision and the relationship of the eye to other body mechanisms. (*c*) Dynamic responses of the eye to light and colour. (*d*) The phenomena of vision, such as fatigue, visual acuity and glare, and falling off of capacity due to age.



A school gymnasium. An example of the 'I suppose it will be taken care of later' school of thought

Armed with the physiological aspects of man's needs, the architect will have a broader basis for his empirical judgments of man's aesthetic and emotional requirements, leading to the satisfaction of the total man.

It is perhaps to the subject of Light that the greatest amount of time would have to be devoted. Light sources have much in common, and design for natural lighting cannot be divorced from that of artificial sources; in many cases they are used together, and in almost all cases they should be related, the lack of integration between the two often being responsible for the disorganised appearance of many contemporary works of architecture, relying as they do on open planning and large areas of plate glass. The courses in artificial and natural lighting should therefore be closely linked together; even though the methods used for calculation differ, the criteria employed in their design have much in common. The following suggestions are made as a basis for such a course:—

(*a*) The characteristics of natural and artificial light sources, their spectral qualities.

Illumination levels and economics and the special characteristics of sunlight.

(*b*) Criteria for lighting design.

There is a need here for a clear statement by the schools, both in terms of technology as the means, and the formal and functional requirements of lighting in buildings as the end. At present the City and Guilds fails to define the end, and the schools of architecture both the means and the end.

(*c*) Methods of light control and optical systems.

Principles of window design and design of lighting fittings. Materials used and additive and subtractive mixture of colour.

(*d*) Physical properties of surfaces to be lit, analysis of materials.

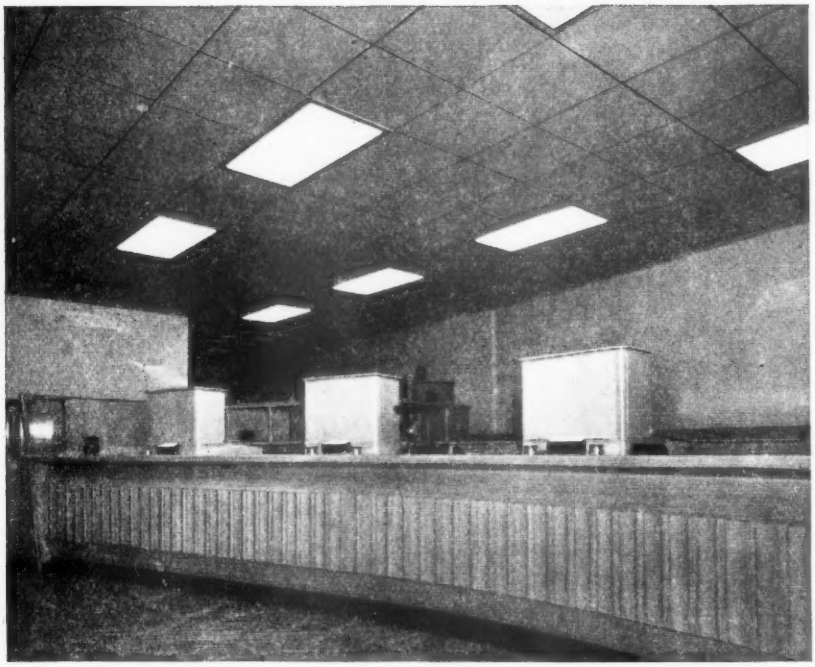
(*e*) Simple calculations for design of lighting installations, both natural and artificial, and the relationship between them.

(*f*) Methods of installation related to structure and methods of electrical distribution.

Although this may appear to be a formidable list, some of the items are in fact picked up in one form or another in the existing courses, such as methods of electrical distribution and the surface properties of materials, all that is required being emphasis in this context.

The Lighting Engineer. Man's physiological attributes already occupy a large part of the syllabus of the lighting engineering student, despite the fact that this may not be evident from the City and Guilds examination requirements, so a student at the end of his training should have an appreciation of those characteristics of lighting known to inhibit man's vision and to cause discomfort. This however does not go far enough, since it should be the aim of the lighting to assist in the promotion of positive comfort or delight; a proposition which has been clearly understood before in our history and which is again receiving attention by people of different interests in the lighting field.

I have suggested that by virtue of his training and particular abilities the architect is more equipped to deal with the aspect of man's needs which for want of a better term may be called his aesthetic needs and which must be studied for a positive



Barclays Bank, Crawley. 'The patterns likely to emerge might parallel that of other building components . . . where various co-ordinated systems have been developed'

approach towards comfort or 'beauty', and to assist the engineer to cross the border I offer the following suggestions tentatively as a basis for study: (*a*) Elementary psychology, with special emphasis on its application in the visual process. (*b*) Systematic subjective study of man's reactions to different light sources (including sunlight) and the effect of their geometry and colour on form. (*c*) An inquiry into the effect on man of the less tangible attributes of unity and variety. (*d*) Theories of aesthetics, implemented by studies of the art and buildings of all periods.

J. W. T. Walsh, in his presidential address to the Illuminating Engineering Society in 1947[2], took as his subject the training of the lighting engineer, and much that he suggested is now commonly accepted, such as the need for instruction in all forms of light, including natural sources and the relationship between natural and artificial sources.

He cautioned students against trying to dictate to the architect in his own field of design, emphasising that the engineer is not an artist. He still advocated however that the student should acquire a knowledge of architecture, stating that: 'the chief advantage that an elementary knowledge of architecture gives to the illuminating engineer is that it enables him to grasp more readily the architect's aims and intentions', and this should 'give the architect confidence that his adviser in the lighting field is aware of the practical limitations of his medium'. I would like to add to this 'is aware of the imaginative ideas and design concepts, upon which the architect has based the form of his building, in order to assist him to give the impression he desires to create'.

The following suggestions are aimed at not only giving the lighting engineer a knowledge of the practical problems and limitations of buildings, but also providing him with an understanding of the history and development of architectural design, leading to a common vocabulary of design with the architect, to assist in achieving the necessary degree of communication with him. Such an outlook might help him to become more of the 'artist engineer' sought for by the Duke of Edinburgh[3]. The course should include the following:—

(*a*) Systems of structure and building technique. This would include methods of support for ceilings and lighting equipment, and a knowledge of new forms of structure, such as shell concrete. The relationship of structure to lighting equipment and methods of electrical distribution.

(*b*) Allied servicing. Acoustics, heating and ventilation, sprinklers, to the extent that these relate to lighting equipment.

(*c*) The modular co-ordination of building materials.

(*d*) Architectural design. History of development, theory and practice.

(*e*) Interior decoration. Use of colour and materials.

The recommendations outlined above are made first to ensure that the architect will have a comparable knowledge of lighting to that which he should possess of structure, to enable him to think in terms of lighting in the initial stages of design, and to avoid asking the impossible of the lighting engineer; and secondly, to assist the lighting engineer to acquire a sensitivity towards the architecture of any period. One of the chief complaints of the architect is that the lighting engineer has ruined his building by putting in an unrelated lighting scheme. This should not be possible when the architect knows what he wants, and sees that he gets this, and not what lack of foresight, lack of suitable standard equipment, or lack of time might force him to accept.

Methods of Education. The cry of closer co-operation with the architect is made by the Illuminating Engineering Society in its *Code of Lighting in Buildings*, and is demanded at an early stage in the design; whether such co-operation is necessary early in the design must depend on the ability of the architect to foresee what he wants to achieve, and within limits how to achieve it, which will in turn depend on the complexity of the architectural programme. It cannot be denied however that closer co-operation—and by this is meant the ability to co-operate whenever necessary at all stages of the design—is desirable. The following educational methods are put forward as a positive step in this direction:—

1. Revision of the syllabuses of the R.I.B.A. and the City and Guilds Examinations to include courses along the lines already mentioned.

2. Courses at the schools of architecture and illuminating engineering, incorporating these revisions. These courses should be given by persons qualified in the respective fields and should not be accepted as an addition to a lecturer's present load.

3. Joint schemes between the electrical engineering and architectural faculties at university or technical college, designed to improve understanding between the students. This might take the form of a lighting scheme to be designed for an architectural design project, either as individual schemes or as group programmes. Alternatively, students might consider the application of lighting to new forms of structure.

The Dow Prize has already been initiated for reasons similar to these, and one successful competition has so far been held. This has up till now had no direct appeal at the school level, where the most fertile field lies. Since lighting is capable of study at 'model' scale, such schemes might be interpreted in this manner, giving students the opportunity to study in detail the lit effect that can be achieved. Such studies would lead indirectly to the development of new lighting systems related to architectural trends.

4. Visits should be arranged as joint projects, to see buildings in which the staff consider interesting lighting schemes have been installed; schemes with obvious faults should also be visited as subjects for constructive criticism.

5. Schemes for training should be initiated for the staffs of such schools, perhaps by the

R.I.B.A. and the Building Research Station, where architects, engineers and research people are already together, or by the Illuminating Engineering Society through the lighting industry. Three or four days or a week of concentrated instruction for those concerned with teaching would get us over the biggest barriers.

6. As an immediate factor for those already in practice, post-graduate studies or symposia along the lines of the recent 'Conferences for Architects on Electric Lighting' should be encouraged, where the R.I.B.A., the Society and representatives of the lighting industry can forgather, both in the provinces and in London.

Criteria. Any attempt to define the legitimate areas of study of the architect and lighting engineer raises the whole question of the criteria upon which the lighting in buildings for human use and enjoyment is based. There has recently been increasing criticism, both here and in the States, of the criteria used for the establishment of the latest standards and principles of illuminating engineering. In the States M. E. B. Bitterman questions the performance technique of evaluating human efficiency[4], stating that there are no techniques for the evaluation of lighting in which we can place complete confidence, and this view is shared by a group of psychologists who similarly desire a more comprehensive approach to the human organism. At the C.I.E. Meeting in Zürich this year, a more positive attitude to comfort was sought to replace the present belief that the absence of discomfort necessarily produces comfort; it was agreed that lighting schemes should be planned for 'beauty', and that an analysis of man's subjective reactions to lighting situations is of equal importance to the purely mechanical attributes of the eye. Further, there is an inability amongst the lighting profession to agree about the illumination levels necessary to perform human occupations in an optimum manner[5].

In the light of this and other criticism it would seem wise for the architect and the lighting engineer to remain alive to the possibility that present standards are not final, and that in such a controversial subject continual development and refinement is inevitable.

The recently published I.E.S. Code is symptomatic of the existing attitude towards artificial lighting design. Apart from direction as to the illumination levels recommended for specific tasks, the Code concerns itself with the elimination of the 'glaring' errors attributable to a science still in its infancy. There is no attempt to point out to lighting engineers the importance of architecture, or to make it sufficiently readable for architects. In its present form it is unlikely that the Code will act as a valuable bridge between them.

Both architects and lighting engineers have an important role in the establishment of significant criteria for lighting design. To give an example of this, there are certain inherent qualities of an object or a material which we expect to see and which aid our recognition of it. Architects who use materials to gain a definite visual impression know the importance of the use of texture, and it is just such qualities as this about which man needs specific 'information'; which 'information' is either assisted or inhibited by the nature of the illumination. The Optical Society of America has published a list of 'modes of appearance' of objects[6], using such well-worn terms as brightness, hue, saturation, size, shape, location, flicker, sparkle, transparency, glossiness, lustre, and in a paper to the American Illuminating Engineering Society[7] Evans has suggested that insufficient data is known about the effect which aspects of illumination have upon these modes. For instance, what would be the effect on the sparkle of a piece of jewellery of: (*a*) the geometry of the illumination, (*b*) intensity of illumination, (*c*) colour of illumination, (*d*) temporal characteristics? The foregoing is a fairly obvious example about which a good deal is known, but in general practice there is very little evidence to show that such knowledge is applied in many situations where the 'information' to be supplied is less evident, in the case of a machine process, an instrument dial, the colour of food, an indoor ball game, a display of sculpture or the formal appreciation of textured or highly polished materials.

Studies of this sort would seem to represent an essential factor in the establishment of fundamental criteria upon which to base lighting design. Individual studies along these lines have been conducted by the research laboratories of the larger electrical companies, and they should also be the legitimate study of the associations of manufacturers of lighting equipment, who seek to increase, among other things, the common knowledge of lighting requirements.

It is the architect's concern to create a building which not only satisfies very rigid practical requirements of space utilisation, structure and servicing but also satisfies the human spirit; he must have an understanding of the less tangible but no less real characteristics which have been found throughout history to appeal to man, to his mind and to his senses. Such knowledge as this is embodied in the generally accepted principles of architecture, of which perhaps the most important is unity, and these architectural principles must be integrated with the criteria for lighting design, if the lighting in a building is to contribute to its architectural unity.

The establishment of criteria along such lines as these may well clarify some of the anomalies which must now confront the lighting engineer who having satisfied all the existing tenets of his code in the design of a lighting scheme for a restaurant finds that, in his capacity as a prospective client, the restaurant leaves him unsatisfied. In fact he may much prefer a restaurant in which the existing requirements of lighting design have not been met, yet in which the lighting itself contributes in a positive manner to the enhancement of the most important items in the room, the food, the wine and the women, giving only sufficient information concerning the rest of the environment as not to inhibit normal human activity; but is so integrated with the decoration as to combine in an architectural unity.

Existing Lighting Practice. This paper is directed primarily towards buildings for which an architect is responsible, but it should be borne in mind that a proportion of the work of the lighting industry is concerned with lighting in buildings, both new and old, for which no architect is responsible. This is in itself a factor in the relationship between the architect and the lighting engineer, but its implications can only be touched upon briefly here.

When the architect designs his building, what is the sequence of events which culminates in a lighting scheme? If the architect has a sufficient knowledge of lighting he will automatically think in terms of light and shade when he is working on the preliminary designs, and he will eventually indicate on his drawings what the lighting equipment should be; he will then prepare a specification to cover it. The drawings and specification may then be sent out to a number of lighting equipment manufacturers for tender, either directly or through the medium of an electrical contractor. The manufacturer submits a quotation for the equipment, using wherever possible standard products and where this is impossible quoting for specially made equipment to the specification. This is in line with other building components in that, in order to specify, the architect will have the catalogues of the available equipment and will base his choice on the quality of the design, the price, the good name of the manufacturer concerned and perhaps nowadays the delivery date. Where he is thinking of an integrated lighting scheme related to other standard structural components, he will search for standard equipment which will meet his need, and failing this will design new equipment for the job. Lighting systems, like structural systems, are in most cases an evolution or a synthesis of the products of different specialisations; it is unusual in the building industry for a single undertaking to manufacture complete structural entities.

Where the architect has an insufficient knowledge of lighting—by far the more usual case—he may do one of two things, depending on the size of the job involved. If it is a large scheme for which there is an electrical consultant, he may ask the latter to prepare a scheme; or whether it be large or small, he may ask a number of lighting equipment manufacturers to submit schemes. It is rare for an electrical consultant to employ anyone qualified to cope with the design of a lighting scheme, so that generally speaking the onus for the design falls upon the lighting equipment manufacturers, who all too often are supplied with the barest information upon which to base their recommendations.

The position of the lighting equipment manufacturer in the majority of cases then is not only to supply the equipment but also to plan the scheme which uses it. It is in

the interests of the lighting equipment manufacturers to plan schemes around their own equipment, and where possible to plan it using 'standard' units, ensuring long runs of work in their factories.

These factors, coupled with the fact that the lighting engineers employed by the lighting industry have had virtually no 'design' training, and are better described as 'lighting technicians', leads to a situation which falls short of what intelligence and reasonable effort should accomplish. The lighting engineers are limited in their approach and the tools at their disposal are mainly limited to the equipment manufactured by their own company. Yet the service offered is free, and although this must affect the ultimate price of the lighting equipment, it makes the position of the independent lighting consultant precarious.

In fairness to the lighting equipment manufacturers, it must be said that since in much building, and in the vast majority of relighting work, there is no architect, the service which they offer is a valuable one. Also, the fact that there is a great deal of equipment on the market which is suitable for architects to use does credit to the team of lighting engineers and equipment designers who are responsible for it.

This does not alter the fact that the existing practice is limited, and in many respects is impeding the development of equipment more suited to meet architectural trends. Where the architect for a building is unknown or deceased it should not be impossible to find a way to arrange consultations with an architect. This in almost all cases will benefit the final result.

Recommended Lighting Practice. The chief asset of successful lighting practice is the potential of those involved, and therefore any suggestions are consequent upon the educational facilities already outlined. These should lead to a new relationship between the architect and the lighting engineer along the following lines.

It is useful to make a distinction between the lighting technician, as now employed by the lighting industry, and the professional lighting engineer, who would be qualified to deal with all aspects of lighting in the broadest sense. Much of what he would do would be outside the direct sphere of the architect, including for instance studio and stage lighting, street lighting, display lighting and the more involved facets of industrial lighting. Basically this professional lighting engineer must be an engineer, which is to say that he should not be in a position to impose his ideas upon an architect when he is called upon to work with him. He would be in the same position as other consultants, initiating in some cases new engineering principles but in general, by a common understanding of the aims and principles involved, complementing the lighting scheme visualised by the architect.

The relationship between the two should be broadly that of the structural engineer and the architect. For small structures the architect's office is equipped to deal with technical as well as aesthetic problems. The scheme as worked out is then sent off to the company tendering for the steelwork, or reinforced concrete, etc., who after checking it and modifying it where necessary will quote for it. Similarly, the architect's office should be capable of planning lighting schemes of this magnitude, and lighting equipment manufacturers, with the same freedom as above, would quote for it. Where the equipment of two manufacturers is necessary for the same scheme, each would be asked to quote for his particular part. For large complicated structures the architect calls upon the services of his structural engineer, and similarly he would call upon the services of his lighting engineer. Such a man should be free from commercial attachments; he would have a professional status and would perhaps be a partner in one of the existing firms of electrical consultants, a member of some new form of partnership covering such areas as 'Heat, Light and Sound', or even a specialist member of an architectural partnership.

The lighting consultant should be called in at a stage in the design process when the architect will have already integrated his own knowledge of structure, planning, acoustics, lighting and other services into a preliminary concept of the form of his building, his own knowledge having been sufficient to think in terms of the lighting initially so as not to ask the impossible. It would then be the job of the lighting engineer to translate the ideas on form into illuminated spaces in a manner which gives light of optimum intensity, colour characteristics, distribution and quality, and in which the lighting equipment itself, where visible, makes a positive contribution to the architectural unity. The lighting engineer will call upon his knowledge of the surface characteristics of materials to ensure that the nature of the lighting is best fitted to relate to it, and his knowledge of man will ensure that he does it in a way which is both physiologically and psychologically fit. It is in such relationship as this that a common vocabulary of design is essential.

The role of the lighting equipment manufacturer would be in the first place to provide effectual photometric data of standard equipment at standard mounting heights for use by architects, and in the second to tender for equipment specified in the above manner, the individual manufacturer being chosen for the type of equipment he produces or is capable of producing to special design. He would be primarily concerned with the development of new equipment to meet architectural demands, to the pattern set by architects and consultants as initiators of the lighting schemes.

The pattern likely to emerge might parallel that of other building components, such as patent glazing, curtain walling, suspended ceilings or partitioning, where various co-ordinated systems have been developed; such a pattern would enable the architect to choose from well designed and engineered lighting systems to fit many different needs, which by mass production will be cheaper than individually designed and purpose-made equipment. This would offer a challenge to the lighting industry to develop new equipment which can be co-ordinated with those other building components with which it must be combined and is capable of sufficient flexibility to suit the demands that will be made upon it.

Conclusion. The fact that the existing training and practice of those concerned with the lighting of buildings does produce some works of quality and imagination should not lead to complacency, for an overall picture shows that more often than not lighting is a disorganising feature of the environment and of the unity of a building. We should therefore examine the existing system carefully to correct its faults and to determine the pattern of future development; the author believes that no improvement can be really effective until the present educational requirements are modified and the standing of the lighting engineer raised, with all its consequent professional obligations.

It is realised that an independent consultant in lighting may be regarded as an unnecessary luxury, since lighting equipment manufacturers offer a free service in 'lighting design', but it should be remembered that the increasing specialisation of building technique, due to the scale and complexity of contemporary architectural programmes, has shown the independent consultant in structure and servicing to be an economic necessity.

Artificial lighting will be developing within the next decade into something which we can only begin to foresee, and it is essential that its potentialities should be integrated with architectural concepts. It is to be hoped that architecture will advance with lighting as one of the fundamental bases of design, using developed sources and materials as its tools and man as its criterion of efficiency, economics and delight.

The author wishes to thank the Directors of the Lamp and Lighting Department of the British Thomson-Houston Co. Ltd. for permission to publish this paper, and also Mr. W. A. Allen [*A*] for being a willing critic.

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Report of the Salaried and Official Architects' Committee on the Representation of Salaried Architects

Chairman: Mr. Leonard C. Howitt [*F*]

In the January JOURNAL *we published the first interim report of the* ad hoc *committee set up by the Council to examine the representation of members in salaried employment and to review the structure of the profession, and also a previous report (submitted to Council in* 1953) *of the Salaried and Official Architects' Committee. We now publish below the latest Report of the Salaried and Official Architects' Committee (Chairman, Mr. Leonard C. Howitt, M.T.P.I. [F]), produced in response to a directive issued by Council at their meeting in December* 1955.

(1) In implementation of the recommendation contained in the first interim report of the *ad hoc* Committee appointed to inquire into the representation of members in salaried employment and to review the structure of the profession, the Council instructed the Salaried and Official Architects' Committee (i) to establish and maintain formal and regular liaison with those organisations which are or may become concerned with negotiations affecting the salaries and conditions of service of architects and architectural assistants; (ii) to try to secure the co-operation of these organisations on all matters affecting such salaries and conditions; and (iii) whenever practicable to co-ordinate and give cohesion to the activities of these organisations which are directed to the betterment of the interests of architects.

(2) The Salaried and Official Architects' Committee considered that their number was too large to carry out expeditiously the tasks specified and implied in the Council's instruction, and accordingly delegated this work to a Liaison Panel, composed of the Chairman and six other members of the Committee.

(3) The Liaison Panel have now held discussions with representatives of the following organisations: the Institution of Professional Civil Servants, the National and Local Government Officers' Association, the Association of Building Technicians, and the London County Council Staff Association.

(4) The first of these discussions took place at a joint meeting with the General Secretary and a member of the National Executive Committee of the I.P.C.S., and the General Secretary and Chief Organisation Officer of N.A.L.G.O.

(5) At this meeting both Mr. Mayne and Mr. Warren (respectively the I.P.C.S. and N.A.L.G.O. General Secretaries), whilst readily expressing their willingness to 'maintain formal and regular liaison' with the R.I.B.A., pointed out that that was, in fact, what they considered their organisations had been doing for some time past. Mr. Mayne reminded the Panel that the I.P.C.S. had had an official representative on the Salaried and Official Architects' Committee for several years, and that he had always regarded this representative's function as one of maintaining a close liaison between the two institutions. He also referred to the numerous occasions when there had been joint consultations for the purpose of promoting the interests of architects in the Civil Service.

(6) Mr. Warren, also, reminded the Panel of the co-operation that had been established between the R.I.B.A. and N.A.L.G.O., and more recently of the appointment by the Council, at N.A.L.G.O.'s invitation, of three members of the Salaried and Official Architects' Committee to whom they could refer urgent questions affecting architects.

(7) Both Mr. Mayne and Mr. Warren left the Panel in no doubt that this existing co-operation would cease if the R.I.B.A. were to set up a separate trade union, or sponsor another that might encroach in their respective spheres of interest.

(8) In regard to the second task of the Council's instruction ('to try to secure the co-operation of these organisations on all matters affecting such salaries and conditions'), Mr. Mayne said his Institution would help in carrying it out, since, in his view, a claim for better salaries and conditions of employment in the public service should be commonly conceived. Mr. Warren, whilst fully acknowledging the Institute's concern and responsibility in this respect, pointed out that he could not commit his Association to a long process of consultation with all the several organisations who might claim to have some interest in the salaries of architects employed in the public service. He explained that N.A.L.G.O. might not be prepared to acknowledge that all these other organisations had a sufficiently substantial interest to justify the all-round consultation that was envisaged; that it would be impracticable to make contact during the process of negotiation with so wide a range of organisations; and finally, that because of the responsibility of their Staff Sides in negotiations with the employers, they had to confine their contacts of consultation with the organisations primarily concerned. He did not doubt, however, that his Association would be happy to maintain such contact with the I.P.C.S. (as well as with the R.I.B.A.) in view of their common interest in the several fields of public service and the general nexus that existed in the salary levels of professional men in them.

(9) None of the representatives of the two organisations fully comprehended the intention and scope of the third part of Council's instruction—'whenever practicable to co-ordinate and give cohesion to the activities of these organisations which are directed to the betterment of the interests of architects'. But both General Secretaries stated that the R.I.B.A. could provide a useful service by collecting and presenting information of the earnings of architects, especially of principals in private practice. Mr. Mayne thought this information would help his Institution in grading architectural appointments, and Mr. Warren in his Association's negotiations with the employing authorities. Mr. Warren added, however, that his Association was not concerned with matters of establishment, which were the exclusive responsibility of the individual employing authorities; and N.A.L.G.O. would only intervene in this field when the duties of a particular post were too onerous for its holder in its existing grade.

(10) After much thought, the Salaried and Official Architects' Committee are satisfied that they are unable at this stage to develop more fruitfully the liaison, co-operation and goodwill that already exist between the R.I.B.A. on the one side, and the I.P.C.S. and N.A.L.G.O. on the other. In their opinion, the Institute is only likely to extend its influence and secure, not only from these two staffs' associations but also from the employers with whom they negotiate, a more ready recognition and acceptance of its aims and policies in the matters under consideration, when it is in a position to supply authoritative and detailed information about the correlation of earnings to responsibility in the profession.

(11) The Liaison Panel next held discussions with the A.B.T., represented by its President, two Past-Presidents and General Secretary. The A.B.T. spokesmen declared their readiness for closer working with the R.I.B.A. and undertook to consider any specific proposals which might emerge from these talks, but which the Liaison Panel were not then and are still not in a position to formulate. The A.B.T.'s claim for recognition as the appropriate trade union for salaried architects, particularly those

employed in private practice and industrial and commercial undertakings, was also discussed but the Committee do not feel justified at this juncture to make any recommendation in regard to this particular matter. This conclusion does not detract in any way from the close and friendly connection that already exists between the Institute and the Association, as witnessed by, amongst other things, the latter's official representation on the Council.

(12) Lastly, the Liaison Panel met representatives of the London County Council Staff Association. This Association is the only one recognised by the County Council to represent the staff in salary negotiations. It is estimated that out of its total membership of approximately 10,000, 450 to 500 are architects and architectural assistants.

(13) The Association's spokesmen expressed their utmost willingness to co-operate with the Institute in any matter conducive to the improvement of salaries and conditions of service of architects employed by the L.C.C.; and they thought that information on a national basis about establishments, status, and salaries would be helpful since obviously conditions that prevailed widely would inevitably affect their own. It was agreed by both sides that further liaison and consultations would be welcome whenever matters of common interest appeared. Similar observations to those set out in paragraph (10) are pertinent to the R.I.B.A.'s relationship with the London County Council Staff Association.

(14) With the exception of the British Association of Colliery Management (with whom liaison has been maintained since 1951), the Committee have not yet been able to ascertain the architect-membership of the various trade unions operating on a national scale in transport, electricity, gas, etc. This information the Liaison Panel are attempting to obtain, but not until it is available will the Committee be able to decide whether any fruitful purpose would be served by establishing liaison with the trade unions concerned.

(15) The Committee recommend that this report, subject to editing, be published in the JOURNAL.

The Annual Convention of the British Wood Preserving Association

The annual convention of the British Wood Preserving Association was held this year early in July at the University Lecture Rooms, Cambridge. Those papers of most interest to architects are here summarised.

Timber Preservation and the Architect.
By C. S. Mardall [*F*].

My qualifications, if any, for putting something down on paper on this subject are that I am a practising architect, in a partnership with a fairly extensive practice, and that I have been concerned with timber construction since some years before the war, especially as consultant architect to the Swedish Government House Exporting Committee. My task then was to work out and perfect the construction of prefabricated houses exported by Sweden and Finland, and the aspect touching upon timber preservation was to consider methods whereby the buildings were not only rendered more permanent but for which the external boarding could be treated in the factory to make further painting unnecessary, except for joinery. Aesthetics, as well as economics, would naturally enter this field, and the timber house exporter had further problems of moisture absorption during shipment and treatment against fire as well as termites when considering the export to tropical countries.

Since the war methods of treatment have improved and new preservatives have been discovered which would render an account of what has been done of merely historical interest.

One of your tasks as an association should be to acquaint the architect with the need for treating timber where desirable, and to tell him which timbers can usefully be treated and particularly which methods would suit his case. The last point is an important one, and although as a professional and advisory association you cannot say that A is a better preservative than B, or that C has a more up-to-date plant, you could at least state under which conditions B is unsuitable, or if you like state when A provides the right answer.

The architect generally does not know that a technical service is provided by the B.W.P.A., and I am under the impression, perhaps wrongly, that this service could be expanded if it were more widely known.

It is not necessary to disclose trade secrets, but each manufacturer, through the Association, could provide enough information to be compiled as a technical publication, listing the basic ingredients of the preservative, its limitations, application and price.

Some guidance should be given as to the anticipated life of the various classes of preservatives, i.e. high initial toxicity or permanence. The information should state any possible risk of contact or contamination, gluing or paint difficulties, odours, etc.

It must go farther than the present list compiled by the B.W.P.A. and care must be taken to avoid presenting it as a medium of advertising. I understand that a booklet is in course of preparation, and I hope it will be the complete answer to all the points raised.

Architects receive daily a mass of literature on building materials and a number of calls by travellers. If one read through even a part of this material or consented to see every second sales representative, a large part of one's working day would be spent unproductively, which is a thing no busy architect can afford. It is therefore imperative that any advertising matter should be concise, informative and convincing. However, an association can achieve far more than individual firms and the main purpose of a publication would be to enable the architect to pin-point his source of information. On a £100,000 contract there may be two standards of timber which must be treated at, say, £15 a standard, and one must offset the £30 worth of treatment against the £100,000 worth total, in terms of importance. Proportionately, if the principal devotes 200 hours to this same contract, the economic time limit for assimilating information on timber treatment would be 3·6 minutes. This is not exactly what happens in practice, but it is as well to bear this point in mind.

There is nothing more exasperating to the architect than when, agreeing to see a firm's representative for some factual information, he finds that the person calling is just a sales representative, with no technical knowledge. Even if the caller happens to be the managing director, if he does not possess this knowledge it is a sheer waste of time and constitutes the worst form of advertising imaginable.

It is impossible for an architect these days to have more than a rudimentary knowledge of many aspects of modern building techniques, yet he is responsible in the end for the finished product. He cannot afford to gamble with his client's money or his own reputation, and therefore he evolves certain methods of getting factual information quickly. Say, for example, I am interested in a new product, which would appear to be the complete answer to my problem; I would put a telephone call through to a friend in the Building Research Station, or the Forest Products Research Station, or the Timber Development Association, and I would not expect them to put down their answers on paper. I think anyone who has been connected with a trade association or research station will appreciate this point.

Every new form of building presents us with a new set of problems and the two major ones connected with contemporary work are those of flat roofs and curtain walling. Condensation and water penetration are ever-present problems in both instances, and furthermore, high thermal insulation for the sake of fuel economy implies sealed structures with the least possible air circulation. Timber or timber products are usually the most obvious materials to use in some form, such as joists or battens, fixing blocks or panelling, and here is a fertile field for decay and fungi. My guess is that treatment of the timber in these positions is the exception rather than the rule, yet published information on failures, particularly in flat timber roofs, would frighten any architect into

adopting treated timber as a matter of course.

Another problem in many new buildings is the difficulty of ventilating the space under wood strip floors, especially in gymnasia and assembly halls. The wider the room the more difficult it is to induce a flow of air between the battens, under the finished floor, to get rid of condensation forming on the concrete slab. The floor battens are treated as a matter of course, and the floor is hardwood, so the problem here is not initially one of decay but of swelling and bulging of the floor boards. You may, quite rightly, say that this is no concern of yours, but I believe that if you decided to widen the scope of your technical bulletins, enlightenment on this point would be gratefully received.

It may be possible to present a good case for treating all structural timber in buildings, irrespective of its ultimate use. The case crudely presented would be as follows: dry rot damage before the war has been assessed at £1,000,000 annually—equivalent to £3,000,000 today, and the present figure, I am told, is in the region of £20,000,000 annually in Great Britain. On the assumption that the quantity of timber for carcassing is in the region of 1,000,000 standards and that the treatment on such a scale could be achieved at £10 a standard, the annual saving to the national economy would be £10,000,000. The £20,000,000 figure, incidentally, does not take into account damage by insects, mainly the furniture beetle and the house longhorn beetle. The structural timber in a council house would hardly exceed one standard, so an increase in first costs on this basis, which seems to be the main concern of public authorities and ministries alike, would not be terrifyingly high. Any attempt at seriously presenting such a case on grounds of national economy would have to be based on factual research and not on guesswork, but the true figures could, no doubt, be established.

I am not in a position to say what the technical difficulties are of such a vast undertaking, but even if the scheme as a whole never materialised the publicity which would result from an unbiased, factual and carefully prepared document would be beneficial to members and general public alike, in making the latter more aware of the advantages of timber preservation.

The quality of timber for general building purposes, as we all know, is deteriorating. Younger trees are being felled, presenting a greater amount of sapwood, and we are no longer in a position, as a timber importing country, to demand selected quality softwoods from our suppliers. The present trend towards timber economy by reducing scantlings to a minimum increases the danger of the ultimate collapse of affected timber. We may require and specify graded timber for trusses and beams, but when the timber is delivered to the site and we reject it the builder is apt to turn to us and say: 'You find the stress graded timber for us and we will order it.'

This fact should present you with a stronger case for preservation than ever, as the sapwood is obviously more vulnerable. Fortunately, penetration by the pressure treatment is generally 100 per cent in the case of sapwood and the remainder can usually look after itself. This is not generally realised by the architect or the public, and I would suggest that the Association in particular makes this fact generally known.

Timber costs have risen since 1939 from, say, £20 to £120 per standard, but costs of preservation have not risen proportionately; you have therefore a better case for treatment than ever before. I know it would be desirable to cut and prepare all timber before treatment but this raises a whole new set of problems, such as time, moisture absorption, distortion, etc.

Mainly because of my limited technical knowledge on the subject of preservation, I have avoided trying to present this as a learned discourse, and I have hardly even touched upon the subject of entomology. This paper is merely a plea for providing a really first-rate service to the architectural profession, which I can promise you will pay dividends in the end.

The Contribution of Wall Linings to the Growth of Fire. By Dr. P. H. Thomas.

There are stages in the growth of a fire, each having its own problems. The first is the primary ignition from a hot source, and the extent to which a material is susceptible to ignition can be measured by exposing it to radiation and finding the minimum intensity required to ignite it. In the second stage the fire spreads from the point of ignition over the surfaces of solid combustible materials, such as wall and ceiling linings, floors and curtaining. The rate at which this spread occurs is an important factor since on it depends the rate of growth of the fire in that compartment. In general there is an accumulation of heat in the compartment which eventually leads to all the combustibles therein being involved, and towards the climax this may become a very rapid process called 'flashover', when the temperature in the compartment rises very rapidly, and from then on the structure of the compartment and neighbouring compartments is seriously endangered.

The fire-retardant treatment of wood will delay and may even prevent ignition. A satisfactory fire-retardant treatment will also reduce the rate at which fire spreads over the surface, and this increases the time taken to reach flashover. The time to flashover is important because not only does the fire then involve the whole of the compartment but the other hazards associated with fire then become very much more severe. The oxygen content of the atmosphere and the visibility in an adjacent room decrease sharply and the carbon monoxide increases rapidly at about the time of flashover. (The author then described the arrangement of the furniture in the model room used in the tests, which included a model cupboard, armchair and table.)

In the traditional type of room (plastered walls and ceiling and wooden floors) the flames spread on the floor, assisted by radiation from the burning cupboard, until the table was involved. When the fire was well established in the table it spread quickly over the rest of the room.

In the room lined with building boards on wall and ceiling, once the flames from the cupboard reached the ceiling the fire developed in an entirely different manner. With untreated fibre insulating board or compressed straw slabs, the ceiling was ignited almost immediately and the flames spread rapidly across the ceiling and down the walls, igniting the furniture before the flames had begun to spread along the floor from the cupboard.

In the rooms lined with treated fibre insulating board there were slight differences depending on the treatments used. With silicate paint the covering cracked very quickly and the protection was small. With surface and impregnation treatments on fibre insulating board achieving higher ratings in the surface spread of flame test, the development of the fire was similar to that for the untreated board, but the fire in the cupboard had to persist for longer before flames spread along the ceiling. With fibre insulating board protected by a $\frac{3}{16}$ in. skim plaster coat the development was similar to that in a traditional type of room.

Some tests were carried out in which the building boards formed only the ceiling, or only the walls of the room. As would be expected, the fire took longer to develop than in the previous series of tests, but the relative merits of different boards and treatments were similar.

The tests showed that the classification of the surface spread of flame test is able to distinguish between the poorer materials in terms of flashover but fails to distinguish between the better materials, and as it was not found possible to change the criteria of the surface spread of flame test to make a more suitable division between gradings, it became necessary to develop a new test designed to grade linings according to the flashover times. In the apparatus used for the new test the panel to be tested forms one side of a chamber, $7\frac{1}{2}$ in. square, and the chamber is electrically heated. Gas jets act as an igniting source; the flue gases from the chamber pass through a chimney in which at a certain point their temperature is measured, and by this means it was found that a classification could be obtained which would correspond to the flashover times noted in the experiments with model rooms, comparison being made with the flue gas temperature obtained with a standard incombustible board.

Although no extensive work has yet been done to examine the behaviour of wood in this test, a few tests have been made for two different fire-retardant treatments, and they gave results in line with expectations.

The author suggested that the answer to the question 'How much is it worth while treating timber?' depended on the relative proportions of treated timber and other

combustible materials present. If all the combustibles are treated then the whole process of ignition and spread to flashover may be slowed down. If only a part of the material present is so treated it is a matter of probability whether the untreated material is near to the igniting source and becomes involved in fire at an early stage; the presence of a small amount of treated material is unlikely to have a significant effect. It might be that the importance of the relative difference between two materials becomes less if only half, say, of the wall surface is covered. This question is important in practice and is one of the problems it is hoped to study.

The Ambrosia Beetle Problem and Log Protection in West Africa. By W. E. Webb, M.Sc., and Tecwyn Jones, B.Sc.

Any programme designed to prevent the degrade and deterioration of timber should be founded on the use of effective means of timber protection at the felling or logging sites, the two most important agencies of degrade being insect pests and fungi, and nowhere are such control measures more necessary than in the timber areas of West Africa where, in Nigeria and the Gold Coast, an estimated loss of at least 15 per cent in value of the forest products occurs. This loss for the Gold Coast alone exceeds £1,000,000 per annum.

After describing the results of observations of the life history and habits of ambrosia beetles the author summarised the steps which should prove most effective for log protection in West Africa as follows: (1) rapid extraction of logs from the forest; (2) bark removal immediately after felling; (3) treatment as soon as possible after bark removal with a spray containing at least 0·5 per cent gamma isomer of benzene hexachloride, preferably formulated in a mixture as a water soluble paint; and (4) elevation on skids if logs are unavoidably retained in the forest for a long period.

Investigations on the Oak Pinhole Borer. By J. M. Baker, B.Sc.

An intensive study is being made of the oak pinhole borer, *platypus cylindrus Fab.*, indigenous to the United Kingdom, with the object of obtaining information, particularly on the problems of attraction of the insects by the logs and on relations between the insects and fungi, which may throw light on similar problems in Africa and other countries where these insects cause much damage. Of the several species of ambrosia beetles in Britain, the oak pinhole borer is the most important as a pest of timber although it is confined to the southern half of the country. Its economic importance is little known to the general public as the insect does not attack, and cannot live in, seasoned wood.

Although the natural habitat of platypus is oak woodland, the felling of trees by man has provided it with new habitats, and now the easiest place to find the insect is in timber yards.

Practice Notes

Edited by Charles Woodward[*A*]

IN PARLIAMENT. Planning Applications. Asked to amend the regulations so that when an application is made for planning permission on any property the application shall state the name of the owner of the property and whether the application is being made with the owner's knowledge and approval, the Minister of Housing and Local Government replied:—The model form of application for planning permission issued by my Department provides that particulars of the applicant's interest in the land should be given; and that it should be stated whether, if the applicant is not the owner, the latter has consented to the proposal. Most planning authorities ask for this information. (2 August 1956.)

Residential Premises (Office Use). Asked whether in view of the increase in new office accommodation in Central London, he would take powers to require applications for planning consent when there is a change of occupier in a residential property now being used for office purposes, for which at present no consent is required under the established user dispensation, the Minister of Housing and Local Government replied:—The approved County of London Development Plan provides that when temporary permissions for the use of residential property for other purposes expire, they will not be renewed, and that property still capable of residential use is not to be turned over to office use even in those parts of London reserved for offices. Various other possible methods were considered of dealing with this problem, including the one suggested by the hon. Lady, to which there are, however, practical objections. (31 July 1956.)

Private Street Works. (Deposit Repayments). Asked if he was aware of the difficulties that arise where money has been deposited with a local authority under the New Streets Act 1951, for road and sewerage works, and subsequent events prevent construction being put in hand; that under the Act there is no apparent power to enable the local authority to repay deposits; what action he is taking in this matter either by legislation or by circulating advice to local authorities; and what particular assistance he is giving to Uxbridge Borough Council who have approached him in regard to their problem at Ickenham, the Minister of Housing and Local Government replied:—I am considering the particular case to which the hon. Member refers, and will write to him. I do not think that any general problem arises. (31 July 1956.)

MINISTRY OF HOUSING AND LOCAL GOVERNMENT. Slum Clearance (Compensation) Act 1956. Circular 43/56 dated 13 August 1956 refers to this Act which came into operation on 2 August 1956. The Circular describes the effect of the Act and states that the Minister has no doubt that local authorities, bearing in mind that the claimants will for the most part be unaccustomed to statutory procedure, give them any help necessary to establish their claims. In particular the Minister hopes that local authorities will use their best efforts to identify and trace persons who, if not informed of the changes introduced by the Act, might remain unaware that they had become entitled to further compensation than the law has hitherto provided.

Persons carrying on businesses in unfit houses whose tenancies are for a year or less are outside the scope of Section 2 of the Act. Local authorities have already in Section 44 of the Housing Act 1936 power to make at their discretion a payment towards the loss suffered by a person owing to disturbance, and in estimating this loss, they are asked to bear in mind the scale of payments for disturbance which will in future be made under Section 2 of the Act of 1956.

Circular 44/56 dated 13 August 1956 deals with the simplification and acceleration of administrative procedure in slum clearance under the Act of 1956.

Both circulars are obtainable at H.M. Stationery Office, price 6*d.* each net.

NATIONAL JOINT COUNCIL FOR THE BUILDING INDUSTRY. National Working Rule 1 (h) (2). As from 3 September 1956 the current rate of wages payable to qualified tubular scaffolders is increased by 1*d.* per hour by a decision of the National Joint Council. The Council decided that particular attention should be directed to the nature of the training and experience which tubular scaffolders must have had in order to qualify for payment under Rule 1 (h).

National Working Rule 3. As from 3 September 1956 an extra payment of 2*d.* per hour is payable to a man using a cartridge-operated rivet gun in consequence of discomfort, inconvenience and risk. This is a decision of the National Joint Council and becomes an addition to Rule 3, Section A.

In current contracts under the R.I.B.A. Form of Contract these payments become a net addition to the contract sum.

THE LIGHTS OF PICCADILLY. Minister's Attitude to Illuminated Signs. Mr. Duncan Sandys, Minister of Housing and Local Government, has told a firm of neon sign manufacturers that although he considers that illuminated signs are not out of place on the eastern section of the façade of the Criterion building in Piccadilly Circus, he is not prepared to approve the use of sites there for signs of an unspecified nature. It is open to the firm to make a fresh application specifying the particular advertisements they wish to display.

Messrs. Claude-General Neon Lights Ltd. had appealed to the Minister against

the refusal of the Westminster City Council to approve two sites on this building for illuminated advertisements. The appeal was the subject of a public inquiry on 15 May last.

A letter to the appellants' solicitor announcing the Minister's decision says: 'He accepts your clients' contention that the sites under appeal are within an area which is already dominated by illuminated advertising and has come to the conclusion that illuminated advertisements on these sites would not be out of place. For reasons of amenity however it is not the practice to give general approval for illuminated advertisements of an unspecified nature, and the Minister does not feel able to approve an application in the terms set out by your clients on the form of appeal. He accordingly feels obliged to dismiss the appeal'. (10 August 1956.)

PRICES OF PORTLAND BLOCK STONE. The price of the above was last increased on 1 August 1954 and since that date increases of nearly 14 per cent in quarry wage rates have taken place.

Although further increases in the price of block stone have thus been warranted, mechanisation, leading to increased efficiency in the quarries, has enabled the price of block stone to be maintained, with the result that whereas building trade wages have increased some 250 per cent since 1939, block stone prices have only risen 63 per cent.

As the principal producers of Portland and other building limestones the Bath and Portland Stone Firms Ltd. and the South Western Stone Company Ltd. have jointly agreed further to subscribe to the national economy and the continuing fight against inflation by maintaining the present prices of the following raw materials until the end of the current year, viz.:

Portland Stone, the Bath & Portland Stone Firms Ltd., the South Western Stone Co. Ltd. *Bath Stone*, the Bath & Portland Stone Firms Ltd. *Doulting Stone*, the Bath & Portland Stone Firms Ltd. *Beer Stone*, the Bath & Portland Stone Firms Ltd. *Painswick Stone*, the South Western Stone Co. Ltd. (1 August 1956.)

SAND AND BALLAST PRICES. Mr. H. E. Peirce, O.B.E., J.P., Chairman of the Ballast, Sand and Allied Trades Association, has made the following announcement:

Standstill in Prices. It is gratifying to learn that the Government, the nationalised industries, and other industries, have at last followed the lead given by ourselves and many others at the beginning of this year regarding a standstill undertaking of their individual prices.

Sand and gravel producers throughout the country have been considering whether they can renew their undertaking. I am glad to be able to say that of the very large number of firms engaged in the production of sand and gravel, the majority have undertaken until 31 March 1957 not to increase their present prices unless something quite exceptional happens.

It is hoped that other industries, and particularly the trade unions, will co-operate since continued inflation and rises in the cost of living are matters of extreme anxiety to us all. (8 August 1956.)

IMPERIAL CHEMICAL INDUSTRIES. Price Restraint. The Board of Imperial Chemical Industries Ltd. welcome the statement on inflation and prices which was recently issued jointly by the Federation of British Industries and other bodies. The Board have no hesitation in declaring their agreement with the policy advocated by F.B.I. As a result it has been decided to make no increase in the home trade prices of the Company's chemicals, dyestuffs, explosives, fertilisers, fibres, paints, pharmaceuticals and plastics at least until 30 June 1957, provided no unexpected or exceptional factors intervene and provided the Company does not incur any major increase in the cost of freight or fuel before that date.

The production costs of certain of the Company's products, particularly those involving non-ferrous metals, depend markedly on imported raw materials which fluctuate widely in price, and for these the Board can do no more than continue their policy of price restraint. (28 July 1956.)

Prices of Plasterboard. In order to assist still further in the stabilisation of prices in the national interest the plasterboard industry announces that it intends to hold firm the present selling prices of plasterboard at least until the end of 1956, provided that no major adverse factors emerge.

The British Plaster Board (Holdings) Ltd. announces on behalf of its wholly owned subsidiaries in the United Kingdom that for the same reason as stated by the plasterboard industry it intends to hold firm the present selling prices of gypsum rock and plasters at least until the end of 1956, provided that no major adverse factors emerge. (27 July 1956.)

LAW CASE

Dawley v. Harrow Borough Council. Damage to House by Tree Roots. In this case the plaintiff claimed damages for injury to his house caused by the roots of elm and ash trees which he alleged spread from the defendants' land. The house was built on a clay soil.

The case turned on the facts, but one of the defences was that the defendants claimed to be entitled by prescription to the free growth of the roots. The trees were 80–100 years old.

In giving judgment for the defendants his Lordship said it did not follow, although he made no findings on the question, that the plaintiff would have succeeded if he had established that the trees were defendants' property. The trees had been there some 80–100 years when the building estate was being developed, and the probabilities were that the roots were well under the land on which plaintiff's house was built. When ordinary agricultural land was used for agricultural purposes, the presence of trees might not be contemplated to do any harm at all. When a house with a roof was placed over the land, water which would normally get to the soil was taken away by gutters and drains and the land was denuded of its supply. That must be known to builders, but where a house was to be put near trees it would be well to prepare the ground beforehand by putting some sort of barrier against the roots and having more substantial foundations. The damages were assessed at £1,000 if the plaintiff had been entitled to judgment.

Judgment was given for the defendants and the plaintiff, who was legally aided, was ordered to pay £5 towards their costs. (THE ESTATES GAZETTE, 18 August 1956.)

Correspondence

BULGED WALLS

The Editor, R.I.B.A. Journal

DEAR SIR,—To supplement my letter in the July issue and the comment from Mrs. Keppich in the August issue: I said that the dense cement and washed sand mix is unsuitable for pointing, but I assumed that the dense pointing was still intact as face pointing. It is the open back joints from which the disintegrated mortar is escaping. The face joints would have retained their full width of ⅜ in. while the back joints diminished in width from loss of support, so causing the wall to bulge.

When I referred to cement mortar, I did not intend to confine this description to the cement and sand mix only. In the building industry we call any mixture which contains cement 'cement mortar', and mixes which do not contain cement 'lime mortar'.

Mrs. Keppich twice refers to bricks as 'old', both in a context which leads one to think that she is of opinion that bricks deteriorate with age. With 'place' and some shale bricks this might be true; hard, well-burnt bricks laid in the late 16th century are still as hard to-day.

The cement: lime: sand mix, which Mrs. Keppich specifies is excellent for pointing. I have used it with suitable slight variations to suit my work for more years that I can remember, but it is better to use a slightly loamy sand.

It may be desirable to push small pieces of slate in here and there, where the work calls for it, leaving them to find their own bed while the mortar sets round them. At the back the pointing is left as rough as chance makes it, not even cutting off the excess mortar, for the rougher it is the better key it will make for subsequent work.

In her final words Mrs. Keppich leaves structural work for aesthetics, when she advises the pointed joint to be finished with a brush. This is entirely a matter of taste. I used to finish the joints of my multi-coloured facings by cutting off the excess mortar and rubbing down the joint with some sacking. Brushes are costly and do not last long on a wall, but any of the usual ways of finishing a joint may be used.

Yours truly,

G. N. KENT [*L. RETD.*]

The Annual Convention of the American Institute of Architects 1956

THE following report has been received from Jeanne Davern, Associate Editor, ARCHITECTURAL RECORD.

All the well-known lures of southern California, from Hollywood and 'Disneyland' to the white sand beaches and the lovely old missions, were competing with the official program for the attention of the 1880 registered for the 1956 annual convention of the American Institute of Architects at the Hotel Biltmore in Los Angeles, and it must be acknowledged that said official program got the worst of the contest. The convention's hosts—the Southern California Chapter of the A.I.A., one of the largest and most regionally conscious chapters in the country—had planned a suitably super-colossal round of tours and entertainments that would have challenged the endurance of a conscientious guest who devoted himself to nothing else. But the 'host' program is quite apart from the crowded official calendar of speeches, seminars, round tables, business sessions and traditional social events; these go on concurrently with the host program (if not, in fact, with each other), and the effect at Los Angeles was often quite dismal attendance at official sessions. (The one 'technical' seminar was attended by 58 people.) The business matters discussed were routine, and the new president, Leon Chatelain Jr. of Washington, D.C., was elected without opposition to succeed George Bain Cummings of Binghamton, N.Y. The consensus seemed to be that it was a highly successful convention: everybody had a marvelous time.

The two high spots of the convention were the opening session, at which John Ely Burchard, dean of the School of Social Studies and Humanities at the Massachusetts Institute of Technology, delivered a challenging and scholarly keynote address on the convention theme, 'Architecture for the Good Life', and the annual banquet, at which architect and planner Clarence S. Stein of New York accepted the 1956 Gold Medal of the A.I.A., the Institute's highest honor, with a memorable plea for 'Communities for the Good Life'.

Dean Burchard urged American architects to reach for an architectural goal beyond 'a high average of convenience and amenity in the provision of places to sleep, eat and work' for 'something that lifts up the spirit when it is beheld or experienced; something indeed that lifts up many spirits'. While he thought architecture in America had reached its 'highest average' of anywhere in the world, Dean Burchard pointed out that the American cityscape has been growing increasingly ugly—partly because 'we have failed almost completely in our effort to educate the common man in the problems and the eloquences of a great national architecture' and partly because of 'the paucity of adornment of our buildings'. On this lately much-bedeviled point, Dean Burchard observed: 'It seems to an outsider that only the will to use art is lacking, and in particular the will to use painters and sculptors as collaborators and partners and not as paid employees.' Although he found 'nothing yet in the 20th century' on the inspirational level of, for example, St. Sophia, Dean Burchard had this to say: 'What we have found are ways to create such inspirations in our own language and by our own methods, if a cause can be found which is worthy of this much effort. . . . American architecture is now mature; it needs only to become great.'

Receiving the official plaudits of his profession at last, America's pioneer city planner called his fellow architects to a new role as practitioners of *community* architecture. 'What we need', said Mr. Stein, 'is an architectural attack on problems much more comprehensive than the individual building. The architect must deal with the whole environment in which his building is set, in which it forms a part, and without which the architect's work is impotent. The community may merely be a small group of interdependent structures, it may—most likely will be—a neighborhood, an urban district, a whole town or city, or even a region.' As urban congestion grows ever worse, and the human need for space ever more with the achievement of leisure for all, architects 'face the task of setting the stage for a completely new production'—the enjoyment of leisure, and accessible space to enjoy it in. 'Modern architecture', Mr. Stein declared, 'demands a modern setting. . . . As community architects we must create cities and buildings as a single entity, completely inter-related in design and structures. We must replace dying cities with communities that fit and foster the activities of the present time.'

The persistent current concern over the larger responsibilities of the architect was reflected also in the two other major speeches of the convention. John Knox Shear, editor-in-chief of ARCHITECTURAL RECORD, called for 'Architecture for the Complete Man'. 'Out of our bountiful technology', he said, 'we have fashioned many wonderful answers to needs never answered before; but to date we have seldom assembled these answers all in one place at one time. We have not yet got a whole architecture for the complete man, the man whose wide-ranging activities and aspirations involve utilitarian and sensory and intellectual demands apparently beyond our present capacity to satisfy. . . . Where in America are the new buildings whose space and structure, whose surface and openings, whose handling of light and color, whose paths of movement and areas of repose, whose gardens and approaches are wholly useful, rich in sensations, and stimulating to mature minds?' The key to reaching a whole architecture, Mr. Shear declared, is 'the sympathetic understanding of man's constitution and motivations. A thorough knowledge of him and all his architectural needs (not just those which demand forms for which we have a predilection) will carry us beyond the cul-de-sacs of abstract argument and arrogant ambition which presently limit our achievement'. Mr. Shear emphasised the importance in the progress to such an architecture of true collaboration between the architect and 'the truly gifted men from the related arts, who, as sensitive artists, are responsive to the emotions of the complete man and whose natural domain is spatial organisation and spatial expression'.

In the convention's closing address Mexican architect and planner Carlos Contreras provided some heartening thoughts at last for the architect ('I have not come to bury him but to praise him') in a capsule 'review' of 2,000 years of architectural contributions to better living, but he did not omit to point out responsibility: 'The architect is in a privileged situation in his profession and in the world. There is a challenge and the opportunity is in his hands to assume a well-defined leadership to eliminate the miserable living conditions of the many; to improve the life and raise the level of the living standards throughout the world—to create a new way of life and a good and beautiful architecture as well.'

The three major convention seminars, which consisted largely of the prepared speeches by assigned panels, were devoted to architecture and the allied arts, architecture for safety (versus hurricane, flood, earthquake and fire) and development housing. Round tables (held concurrently with the seminars in some cases) covered preservation of historic buildings, school building trends, office practice, and A.I.A. affairs. Numerous exhibitions held in connection with the convention included the annual displays of A.I.A. Honor Awards for Current Work and—with the co-sponsorship of the manufacturers' association, The Producers' Council Inc.—of building products. In addition to the Gold Medal, honors presented included the Fine Arts Medal, to Hildreth Meiere of New York 'for excellence in painting and mosaic murals'; the Craftsmanship Medal, to Harry Bertoia of Barto, Pa., 'for excellence in metal design and craftsmanship'; Honorary Fellowships to Jean Manoury, architect for Chartres Cathedral, Gustavo Wallis of Venezuela, past president of the (IX) Pan American Congress of Architects, Ernesto Rogers of Italy, and Edmund G. Lucero, President of the Philippines Institute of Architects; and Honorary Corresponding Membership in the Royal Institute of British Architects, to A.I.A. Past President Clair W. Ditchy of Detroit and A.I.A. Executive Director Edmund N. Purves, of Washington, D.C.

Review of Construction and Materials

This section gives technical and general information. The following bodies deal with specialised branches of research and will willingly answer inquiries.

The Director, The Building Research Station, Garston, near Watford, Herts.
Telephone: Garston 2246.

The Officer-in-charge, The Building Research Station Scottish Laboratory, Thorntonhall, near Glasgow.
Telephone: Busby 1171.

The Director, The Forest Products Research Laboratory, Princes Risborough, Bucks.
Telephone: Princes Risborough 101.

The Director, the British Standards Institution, 2 Park Street, London, W.1.
Telephone: Mayfair 9000.

The Director, The Building Centre, 26 Store Street, Tottenham Court Road, London, W.C.1.
Telephone: Museum 5400 (10 *lines*).

The Director, The Scottish Building Centre, 425–7 Sauchiehall Street, Glasgow, C.2.
Telephone: Douglas 0372.

Cuprinol Sealer for Wood. Messrs. Cuprinol Ltd., of Terminal House, Grosvenor Gardens, London, S.W.1, announce a new water repellent wood preserver called Cuprinol Sealer. They claim that it prevents decay and woodworm attack and minimises movement in timber as it lessens the absorption of water by as much as 85 per cent and therefore should give protection to joinery exposed on building sites before being fixed. The sealer contains the metallic salts which form the basis of Cuprinol wood preservers against the hazards inimical to timber.

The sealer may be applied by immersion, brushing or spraying.

Hand and Machine in the Country is the title of the Annual Report of the Rural Industries Bureau, price 1*s.* 6*d.*, covering the period April 1955–March 1956.

The report gives many instances of the craftsman willingly accepting mechanical aid where it is useful; for instance, a mechanical reed-cutter for harvesting Norfolk reed has been developed which will reduce costs and increase supply since the slow process of harvesting reed by hand using a scythe, and the cost of labour, make this material too dear to use at any distance from the reed beds.

There is a section on the Bureau's Clay Testing Station at Arborfield, Berkshire, where development work covers the uses of different types of sand, and the production of various textures, colours and shades of brick by different burning conditions. The exhibit at the Building Centre of hand-made bricks is a constant reminder of the beauty of the local brick, whose cost is so high and quantities so low, unfortunately.

The Station has made tests of the suitability of pulverised fuel ash in brick-making and is engaged in attempting to reduce the absorption factor in a brick consisting of 80 per cent p.f.a. and 20 per cent clay. The report also states that first-class results have been obtained in the use of slate quarry waste for brickmaking and that bricks and floor tiles of high crushing strength have been produced experimentally but that it will be necessary to set up a modern plant close to a slate quarry to make the process economic.

The demand for the work of rural wrought iron smiths has grown steadily since the war. A good example of other metal work is shown in one of the illustrations, a welded steel grille designed by the Bureau.

Mention must be made of the assistance given by the Rural Industries Loan Fund in providing quarrying equipment, particularly in the case of a quarry producing 1 in. slabs suitable for facing and cladding modern buildings which is now receiving very satisfactory orders.

The address of the Bureau is 35, Camp Road, Wimbledon, London, S.W.19.

B.S.I. Annual Report 1955–1956. This Report covers the period from 1 April 1955 to 31 March 1956. Copies of the separate Divisional Council reports are available on application. The Annual Report states that the year was one of the most active since the war. The sale of British Standards created a record at 934,000; industrial membership and subscriptions increased, and the total of current British Standards and Codes of Practice was 2,760.

Growing interest was shown by manufacturers of industrial goods in the advantages of certification marking, due in part to requests from customers for certified products. At present certification marks other than the 'kite' are in use, but it is hoped that before long the Institution's mark of approval will be represented only by that symbol.

The price of the report is 5*s.* net.

Glazed Asbestos Cement. Messrs. Turners Asbestos Cement Company Ltd. have brought out a finish to asbestos cement material which they call 'Turnall' Colourglaze. The glaze is applied at the works and it is claimed that the finish has high resistance to corrosion and will not readily fade or wear, and that it actually bonds to the asbestos cement by reason of its chemical composition. Painting and repainting are thus eliminated.

The finish can be had in a standard range of 14 colours, including black and white, and at present it is available on the roofing products, rainwater goods and soil pipes manufactured by the company, whose address is Trafford Park, Manchester, 17.

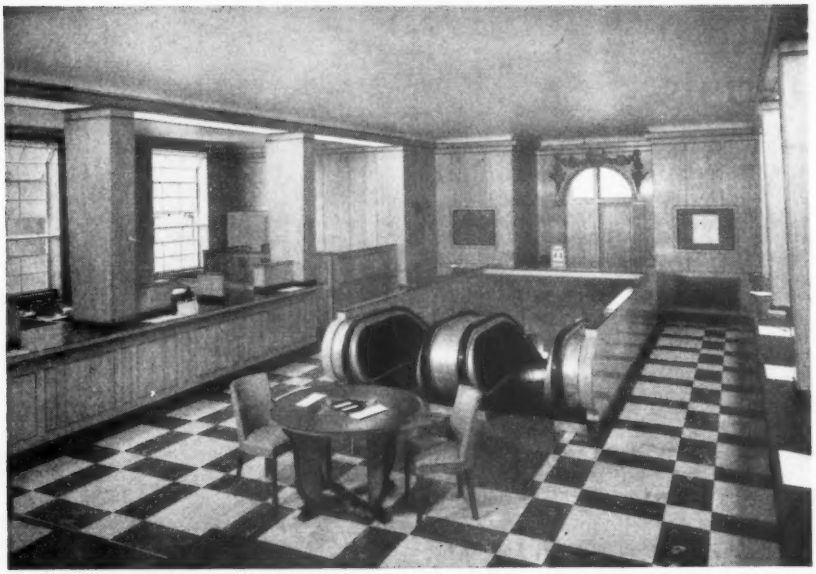
The Hurdapta double duty convector

A Double Duty Convector. Messrs. Hurseal, Ltd., of 229 Regent Street, London, W.1, announce a new development of their Hurdapta open fire convector; it is a gas fire unit which can be clipped into position on the Hurdapta where the open fire would normally be and thus heat is available during cold snaps that hardly call for lighting the open fire.

Messrs. Hurseal have also produced a set of grilles, comprising two side sections and a top member, for use where the Hurdapta fire has to be set in an opening either wide, tall or both. Being grilles, they do not diminish the convection effect. The firm feel that these two developments may be of interest to architects, heating engineers and local authorities who are concerned with the economic and practical heating of houses and large-scale housing estate development.

Anodised Aluminium-Silicon Alloy. The Cape Asbestos Company Ltd. announce that there is now available in this country an anodised aluminium-silicon alloy building sheet as a veneer to special grade panels of their Asbestolux asbestos insulation board. The alloy used is Noral 33S in the form of a 24 s.w.g. stucco-embossed sheet. The anodising process increases the alloy's resistance to corrosion and combines with the silicon to give the metal a natural grey colour, so it does not look dirty; the embossing and anodising also give a slightly grained effect and the embossing reduces the strong reflections from the sun which the normally mirror-like surface of the flat sheet is apt to give.

A PVC Water Stop. In the February 1952 issue of the JOURNAL a note appeared describing a rubber water stop for sealing joints in concrete structures; it was made by Messrs. Expandite Ltd. of Chase Road, London, N.W.10. The firm now announce a water stop made from virgin PVC, containing no fillers or scrap material; it is flexible, resilient, not easily damaged, not



Escalator access to the banking hall, Barclays Bank, Cardiff

subject to corrosion, and the making of site joints does not call for exceptional skill. The material is in the form of a strip with bulbed ends and it is the mechanical lock of these ends in the concrete that forms the seal and not any bond made with the concrete.

Messrs. Expandite do not make undue claims for the stop; they recommend it for joints where performance requirements are not severe, but in structures where large movements may occur and the maximum degree of watertightness is required they recommend that their rubber water stop should be used.

New Bank at Cardiff. Banks, in the mind of the public, are associated with premises on the ground floor level, but Barclays Bank have recently broken that tradition by placing their new premises at Cardiff on the first floor, and it is thought to be the first in Britain to be so situated. The ground floor is occupied mainly by shops, and access to the banking hall is by escalator and lifts; it is panelled in aspen wood and floored in rubber.

The architects were W. Curtis Green, R.A., Son and Lloyd [*FF*]. The general contractors were Hinkins and Frewin, Ltd.

A Planning Rule for Lifts. Some years ago Messrs. Marryat and Scott Ltd. brought out a 'lift planning rule,' and they have now issued a revised and up-to-date edition of it as a helpful guide to architects and others in the early stages of planning, when information is sometimes urgently required. In the later stages the advice of a specialist should be sought.

The planning rule takes the form of an envelope approximately 10¾ in. long by 4¾ in. wide, open both ends, and with several 'windows' cut out on each side. One side deals with passenger lifts, the other with service, hospital and goods lifts. A moveable strip slides between the two faces and on it are printed certain figures, which appear in the appropriate windows according to the type of lift showing in the 'handling capacity' window as the slider is moved about, in the case of passenger lifts. The other windows show the number of persons the cage will hold, the depth of pit required, headroom from top landing level to ceiling of motor room, size of cage and well, and equivalent dead load on building.

The reverse side of the planning rule has windows showing information regarding service, hospital and goods lifts.

Copies of the rule are available, free, to architects on application to Messrs. Marryat and Scott Ltd., Wellington Works, Hounslow, Middlesex.

Adhesives for Wood. The third edition of Forest Products Research Bulletin No. 20, *Requirements and Properties of Adhesives for Wood*, has now been published. It describes the uses and requirements of glues and gives a detailed description of the six types of adhesives; animal glues, blood albumen, casein glues, soya and other vegetable proteins, starch derivatives, and synthetic resins. Reference is made to relevant British Standards. The bulletin is published by H.M.S.O., price 2*s*.

British Standards Recently Published

B.S. 1125: 1956 **W.C. Flushing Cisterns (including Flush Pipes).** This Standard has been divided into four sections: general requirements, requirements for low-level cisterns, for high-level cisterns, and for flush pipes. The minimum inside width for the cistern shell is given, the external dimensions being controlled only by the minimum thickness of the material. It has been thought unnecessary to control the external shape.

Possible materials for resisting corrosion are divided into three groups: non-corrodible, corrodible but effectively protected, and products which corrode so slowly as to be virtually unaffected. For the first time provision has been made for bottom entry cisterns. Price 3*s*.

B.S. 1198, 1199 and 1200: 1955. **Building Sands from Natural Sources.** These three Standards have been revised and are now published in one volume under the above title, thus making it a companion volume to B.S. 882 and 1201, issued as 'Concrete Aggregates from Natural Sources'.

B.S. 1198 deals with sands for internal plastering with gypsum plasters; B.S. 1199 with sands for external renderings, internal plastering with lime and Portland cement, and floor screeds; and B.S. 1200 with sands for mortar for plain and reinforced brickwork, blockwalling and masonry. The price of the volume is 3s.

B.S. 1230: 1955. **Gypsum Plasterboard.** This Standard has been revised to bring its requirements into line with present practice; the weight range has been made more uniform and its emissivity has been improved. Requirements for gypsum lath of ½-in thickness have been included as it is available in lengths of 4 ft. and 4 ft. 6 in. Exclusions are the requirements for anhydrite plaster for use in plasterboard—as the material is no longer made—and those for hard gypsum wallboard of ¼ in. thickness. Price 2*s*. 6*d*.

B.S. 1422: 1956. **Steel Sub-frames, Sills and Window Boards for Metal Windows.** This Standard introduces a sill with a profile that simplifies manufacture and fixing, and it now covers steel window sub-frames of two types suitable for either rendered or fair face, or solid and cavity walls respectively.

There are now six different profiles for steel window sub-sills, eight profiles for steel window sills, and seven for steel window boards; thus there is a complete range of auxiliary components for use with British Standard metal windows to B.S. 990. Price 4*s*.

The permanent exhibition of the Gold Coast Timber Federation at the Building Centre, designed by S. P. Jordan [*A*].

Notes and Notices

NOTICES

New Building Materials and Preparations. The attention of members is drawn to the fact that information in the records of the Building Research Station, Garston, Watford, Herts, is freely available to any member of the architectural profession, and architects would be well advised, when considering the use of new materials and preparations of which they have had no previous experience, to apply to the Director for any information he can impart regarding their properties and application.

Members and Professional Affixes. The Council's attention has been called more than once to the practice among some members of adding a string of letters of doubtful value to the affix indicating membership of the Royal Institute on their letter paper.

This is a matter in which the Council obviously cannot dictate to members, and must trust to their good sense. It should be obvious, however, that the affix of a chartered body of high standing is weakened in effect by the addition to it of a string of other mysterious designations, some of which probably indicate no more than the payment of an annual subscription.

Shapes and Sizes of Technical Literature. Postcards for use by members asking manufacturers to produce technical literature in accordance with B.S. 1311: 1955 are available from the Secretary, R.I.B.A., on application.

Luncheon and Tea Facilities for Members. Members are reminded that there is a self-service dining room on the second floor of the R.I.B.A. building where luncheons are served between 12 noon and 2 p.m. on weekdays except Saturdays. The dining room is open to members and Students. There is a 'Club' licence and drinks can therefore be obtained with meals. Members may bring guests.

Morning coffee and afternoon teas have hitherto been served in the Members' Room on the first floor. Owing to the rebuilding programme the Members' Room has to be taken over for temporary office use and the service of coffee and teas will, during the period of rebuilding, be available on the second floor landing.

Cessation of Membership. Under the provisions of Bye-law 21 the following has ceased to be a member of the Royal Institute:—*as Licentiate*, John Beaumont.

COMPETITIONS

Proposed Municipal Offices and Civic Hall, Carlisle. The Corporation of the City and County Borough of Carlisle invite architects registered under the Architects (Registration) Acts and resident in Great Britain, Northern Ireland or the Republic of Ireland to submit in competition designs for a new Assembly Hall and Municipal Offices to be erected in Carlisle.

Assessor: Professor W. B. Edwards, M.A., B.Arch., M.T.P.I. [*F*].

PREMIUMS

(*a*) Preliminary Stage. Six competitors will be selected to proceed to final stage. Each will receive the sum of £300. Last day for submitting designs, Thursday 31 January 1957.

(*b*) Final Stage. The author of the design placed first will receive £1,000. Last day for submitting designs, 1 July 1957.

Last day for questions, 27 October 1956.

Conditions may be obtained from the Town Clerk, 15 Fisher Street, Carlisle.

Deposit £2 2*s.* 0*d.*

An applicant for the conditions must state his registration number or the number of the receipt issued to him by the Architects Registration Council in respect of the admission fee.

New Technical College Buildings, Paisley, Scotland. The Governors of the above College invite architects registered under the Architects (Registration) Acts and resident in Great Britain, Northern Ireland or the Republic of Ireland to submit in competition designs for new Technical College buildings in Paisley, Scotland.

Assessor: Professor R. Gardner-Medwin, M.T.P.I. [*F*].

Premiums: £1,500, £1,000, £500.

Last day for submitting designs: Noon on 27 March 1957.

Conditions may be obtained from Messrs. J. and A. Gardner, Clerks to the Governors, 3 County Place, Paisley, Renfrewshire.

Deposit: £2.

An applicant for the conditions must state his registration number or the number of the receipt issued to him by the Architects' Registration Council in respect of the admission fee.

New National Opera House at Bennelong Point, Sydney, Australia: International Competition. The Government of the State of New South Wales invites architects who are members of their respective architectural institutes in any country in the world to submit designs in competition for a proposed National Opera House, to be erected on Bennelong Point, Sydney, Australia.

Assessors: Professor H. I. Ashworth, M.A.(Arch.), F.R.A.I.A. [*F*], Sydney; Mr. Cobden Parkes, F.R.A.I.A. [*F*], Sydney; Dr. J. L. Martin, M.A. [*F*], London; Mr. Eero Saarinen, A.I.A., Michigan, U.S.A.

Premiums: £A5,000, £A2,000, £A1,000.

Last day for despatching designs: 3 December 1956.

Every intending competitor was required to register his name and address in writing with the Secretary of the Opera House Committee not later than 15 *March* 1956.

International Competition, Geneva. The Department of Public Works for the Republic and Canton of Geneva are promoting an International Contest of Ideas for the layout of the Place des Nations and of the Approach to the Secretariat of the Palais des Nations in Geneva. Assessors: M. Jean Dutoit, Prof. Sir Patrick Abercrombie [*F*], M. Eugène Beaudouin, M. Jacques Carlu, M. Arnold Hoechel, M. Giulio Minoletti, M. Werner Moser. The Assessors will work in consultation with representatives of the European Office of the United Nations, the City of Geneva, the Chief of Police of Geneva, the Secretary General of the Department of Public Works.

Premiums: 40,000 Swiss francs to be awarded to a maximum of 5 entries; 10,000 Swiss francs for the purchase of the premiated entry.

Last day for the despatch of entries: 6 p.m., 15 April 1957.

Conditions may be obtained on application to the Department of Public Works, 6 rue de l'Hôtel de Ville, Geneva.

Deposit: 50 Swiss francs, returnable if an entry is submitted.

The conditions of this competition have been approved by the I.U.A.

International Competition. The following international competition is at present being considered by the International Union of Architects, who are negotiating the conditions with the promoters.

Competition for a monument in New Delhi to commemorate the 2,500th anniversary of Buddha's Enlightenment.

Promoted by the Government of India.

In this case the Secretariat of the I.U.A. have examined the published conditions of the Competition and found them to be generally unsatisfactory and not in accordance with the standard regulations for International Competitions approved by UNESCO (R.I.B.A. Kalendar page 812) on the advice of the International Union of Architects. Member nations of the I.U.A. have accordingly been warned not to participate, but negotiations are taking place between the I.U.A. and the promoters with a view to bringing the published conditions into conformity with the standard regulations and a further note will be published as soon as the conditions are reported by the I.U.A. to be satisfactory.

ALLIED SOCIETIES

Changes of Officers and Addresses

East Anglian Society of Architects. The address of the Joint Hon. Secretary, R. W. Sutton [*A*], is St. Faith's House, Mountergate, Norwich, Norfolk.

South Eastern Society of Architects. Brighton District Chapter. Chairman, L. H. Parsons, M.B.E. [*F*], 'Milnwood', 13 North Parade, Horsham, Sussex.

South Wales Institute of Architects. Eastern (Newport) Branch. Hon. Secretary, R. Payne [*A*], 19 Commercial Street, Newport, Mon.

Bristol and Somerset Society of Architects. The annual cricket match between the Bristol and Somerset Society of Architects and the Bath Group took place on the Thornbury cricket ground on the evening of Wednesday 6 June. Mr. R. A. Le Fèvre [*A*] sends the following account:

'The game was on the usual basis of twenty overs for each side and this year fortunately the rain stopped just as the match began. Bath opened with Bishop and Hawkins against hostile and quite accurate bowling by Palmer and Poling. The first pair put on 29 runs but after this there was nothing that might be described as a stand and Bath finished with 68 runs in their ration of 20 overs. The last wicket fell with the last ball of the twentieth over, which was tidy to say the least. Bishop made a very useful 20. Taylor 10, Griffiths 10 and Extras 9 were the only other scores of note. Palmer took 4 for 14, Poling 3 for 32, Fleming 2 for 11 and there was one run out.

'Bristol opened with Wakefield and Palmer against the bowling of Fisher and Griffiths. Wakefield carried his bat last year but this year he edged his third ball and the wicketkeeper took a very good catch. The next two wickets fell quickly—4 runs for 3 wickets and Bath were right on top. Rowden 11 and Hill 17 now made a useful stand but after they had gone no one else stayed for long and the score moved slowly to 51 for 9 wickets with an over still to go. The Bristol remaining batsman was

Burrough, the captain, to whom 18 runs in an over represent no special problem. The Bristol nine and ten batsmen however defended their wickets without clearing the field and the Bristol score ended at 57 for 9 wickets. Fisher took 3 for 11, Griffiths 2 for 8, Norton 1 for 13 and there were 3 run outs: victory for Bath at last, which greatly enhances the prospect for next year's game.

'The Thornbury ground is in one of those delightful rural settings where the entrance to the ground is through the "pub" yard, and within seconds of the end of the game the teams and spectators were safely in the Ship Hotel. Although this year Bath were nominally the hosts, the Bristol Secretary had again booked a very lively jazz band and organised a dance and buffet supper: all of which added up to another very pleasant evening.'

GENERAL NOTES

R.I.B.A. Cricket Club
R.I.B.A. v. R.I.C.S. 15 *August* 1956.

R.I.C.S.

D. T. H. Deagle, c Morris b Norton	30
W. J. Bullard, c Burrough b Francis	7
M. C. Geddes, b Robinson	5
A. Goater, c Burrough b Francis	44
A. J. Drew, not out	100
A. King, b Batty	23
R. Mash, c Morris b Norton	15
P. W. Chessher, not out	9
F. J. Pitman, C. Harrison, D. G. Gray } Did not bat	
Extras	14
Total (for 6 wkts.)	247

Francis 2 for 48; Robinson 1 for 44; Douglas 0 for 21; Norton 2 for 41; Morris 0 for 15; Batty 1 for 29; Fyson 0 for 35.

R.I.B.A.

J. G. Batty, b Pitman	24
A. E. J. Morris, run out	17
D. L. Robinson, b Mash	72
G. Fyson, b Drew	38
C. Calthard, b Gray	11
T. Burrough, b Gray	0
J. Kennedy-Hawkes, not out	22
C. A. R. Norton, b King	9
A. Douglas, not out	7
R. H. Holmes, H. E. S. Francis } Did not bat	
Extras	4
Total (for 7 wkts.)	204

Harrison 0 for 60; Gray 1 for 42; Drew 1 for 36; Pitman 1 for 36; Mash 2 for 13; King 1 for 13.

R.I.B.A. v. Club Cricket Conference. 29 *August* 1956. The annual game between the R.I.B.A.C.C. and the Club Cricket Conference was played on the Wimbledon Cricket Club ground on Wednesday 29 August, the R.I.B.A. recording their first victory since the match was first played in 1950.

The Conference won the toss and put the R.I.B.A. in to bat. At lunch the score was R.I.B.A. 97 for 2. After lunch fast bowlers Hill and Burton, who took the wickets of Fyson, Case and Norton with successive balls, caused the collapse of the remaining batsmen.

The Conference began badly, losing their first six wickets for 46 runs before Sherwood, assisted first by Burton and later by Hill, gave the score a more respectable look.

When the last over began the Conference, with one wicket in hand, needed 9 runs to win. Davies made a great effort to get the runs but was clean bowled by the fifth ball, and the R.I.B.A. had won by 2 runs. For the R.I.B.A. Case, Robinson and Wood all bowled extremely well, and the fielding was very good.

This was the last Conference side to be managed by Cecil Davies, who has shouldered this responsibility since the fixture began. To mark the occasion, the Captain of the R.I.B.A. Cricket Club presented a tankard to him during lunch on behalf of all those who had played in this game.

R.I.B.A.

J. G. Batty, run out	48
A. E. J. Morris, b Burton	3
D. J. Robinson, b Hill	36
J. Seward, b Burton	3
G. Fyson, lbw b Burton	3
M. K. Levy, c Wicks b Hill	1
T. Burrough, b Burton	2
R. Case, b Burton	0
C. A. R. Norton, b Burton	0
A. D. Wood, b Hill	16
R. Holmes, not out	0
Extras	11
	123

Burton 6 for 31; Hill 3 for 27; Sears 0 for 34; Davies 0 for 18; Sherwood 0 for 4; Goodall 0 for 3.

C.C.C. XI

A. H. Brown, b Case	5
P. V. V. Sherwood, c Wood b Robinson	49
L. A. Sears, b Case	6
G. Worthington, b Case	0
A. Goodall, b Wood	0
B. Wicks, b Case	1
E. Pomeroy, c Robinson b Wood	1
T. Burton, b Case	16
R. H. F. Hill, b Robinson	15
C. S. Davies, b Case	15
D. Bennett, not out	2
Extras	11
	121

Case 6 for 54; Robinson 2 for 5; Wood 2 for 51.

Obituaries

Lionel Bailey Budden [*F*], Emeritus Professor of Architecture at the University of Liverpool, died on 21 July, aged 69. We are indebted to Mr. Peter Shepheard, A.M.T.P.I., A.I.L.A. [*A*], for the following appreciation:

'Lionel Budden was a graduate of the young school of architecture at the University of Liverpool with first class honours in 1909, winning in the same year the University travelling scholarship and the Holt travelling scholarship, which he used to spend a year in Athens. He became an Associate in 1913 and a Fellow in 1929. In 1923 he won the R.I.B.A. Essay Medal for an "Introduction to the Theory of Architecture", a subject to which he was devoted all his life. He was the architect of several important buildings, including the war memorials of Liverpool and Birkenhead, the Liverpool veterinary hospital, the extensions to the Students' Union and the School of Architecture itself which was rebuilt as an extension to two Georgian houses in Abercromby Square in 1933.

'But his great work was as a teacher, embodied in over 40 years' service to the Liverpool School of Architecture where he began teaching in 1911. He was medically unfit for war service in 1914 and was in charge of the school while Charles Reilly was in America. He became Roscoe Professor of Architecture on the retirement of Reilly in 1933 and held the chair until his own retirement as Emeritus Professor in 1952.

'Those of us who were students in 1933, under the spell of the flamboyant and spectacular Reilly, had formed the idea that Budden was the perfect second-in-command, and we had a typical students' fear of what might happen when this modest and gentle man—for we loved him—took over as chief. We were soon to learn how much of the strength of the Liverpool School depended on Budden's rational and liberal approach to architecture. Modern architecture, as a revolutionary idea, very precious to the student mind, seized the Liverpool school during the first year of Budden's professorship; and although Budden was essentially a classical man and might well have tried to curb the ardour with which we abandoned all the disciplines at once, he never did. He had an innate sympathy with the young man's point of view and he backed up and encouraged all our experiments, lecturing us all the while in lucid and graceful English on his passionately held belief in the eternal principles of architecture; one of the best of these lectures was his inaugural address as Roscoe Professor which he called, typically enough, "Synthesis in Architecture: the Contemporary Process". But he did not only lecture us: his interest in his students was intense and personal and persisted long after one had left the school.

'He believed that the school system was the best, if not the only way to train architects, and few men have done more to make it so. He served for many years on the Board of Architectural Education, and the report of the Special Committee of which he was a leading member is one of the best, and certainly one of the best written, reports ever to lie in a pigeonhole.

'Serious he was, because architecture is a serious matter; but not earnest, not dry. His sense of humour was keen and ebullient and all his friends will remember how his acute and rather bird-like face lit up with fun as he told with his renowned wit and skill one of his vast fund of comic tales; charitable ones usually, because he was kind, but he was also a truly liberal man and when tilting at any kind of oppression his wit could be devastating. Perhaps it was this quick humanity which urged him to give a post-war home at Liverpool to the Polish School of Architecture, now of course closed, but in its time a most happy and successful venture; and it showed again in my last talk with him a few weeks ago when he expressed his dismay on hearing that several short-listed candidates for a recent architectural appointment had been turned down because of political views someone thought they might have held.

'Architects all over the world will remember with gratitude this dear and excellent man, and will reflect on the good fortune of the Liverpool School of Architecture in having been guided through its first half-century by two such disparate and yet complementary personalities as Sir Charles Reilly and Lionel Budden. And perhaps they will agree that among Budden's many achievements not the least was to show how the qualities of humility and gentleness, humanity and generosity can be given enough energy, enough bite and enough humour to make themselves felt in policy and in action.'

Professor Claude Batley [*F*], past President of the Indian Institute of Architects, died on 20 March, aged 76.

He was born in Ipswich, educated at the Queen Elizabeth Grammar School and served his articles locally. He practised in Kettering, Northants, and in London, and in 1913 went to India, where he entered into partnership with Mr. T. S. Gregson [*F*] and Mr. H. Foster King [*F*]. He also joined the teaching staff of the architectural section of the Sir J. J. School of Art, Bombay. He was appointed Professor of Architecture in 1924, and held this post until 1943. During this period he did much to bring the School nearer to the securing of exemption from the R.I.B.A. examinations and after retirement he still continued his work for architectural education in India, serving as Chairman of the All India Board of Architectural and Regional Planning Studies.

An active member of the Indian Institute of Architects from its inception, he was twice its President and was mainly instrumental in raising its status as the official controlling body of practising architects in India.

He carried out a vast number of works in India, including premises for the Bank of India Ltd. and for Glaxo Laboratories Ltd. in Bombay, other industrial buildings, schools, hospitals, Cusrow Baug and other housing Estates for poor Parsees, churches, temples, mosques, synagogues, flats, town halls and a multiplicity of residences for the rich 'Seths' of Ahmedabad.

Mr. D. R. Chowdhari [*A*], a partner in the firm of Gregson, Batley & King, says: 'He was a gentleman of the old school who was held in unusual regard and esteem by one and all. India is poorer by his passing away.' Mr. H. Foster King, A.M.T.P.I. [*F*], says: 'I think the greatest thing about our friend was his life. His gifts were large, his culture was rich and broad and he did an astonishing amount of work right up to the very end. . . . [He] thoroughly enjoyed life, and when he was with congenial company his spirit flowed out in sheer pleasure. He was intensely human. He got into close touch with all kinds and conditions of men and had a way of entering into almost any life. His going has cast a shadow on many of our lives, it has made tasks the harder for some of us and it has left us so much the poorer.'

Sir John Stirling Maxwell, Bt., K.T. [*Hon. A*], of Pollok, died on 30 May 1956 at Pollok House, Glasgow, within a few days of the completion of his ninetieth year. Mr. William McCrea [*F*], President of the Royal Incorporation of Architects in Scotland, has written the following appreciation:

'Sir John Stirling Maxwell was born in London and was the elder son of Sir William Stirling Maxwell, the ninth baronet, who was formerly Stirling of Keir. When he succeeded to the baronetcy on the death of his uncle Sir William assumed the additional surname of Maxwell.

'Sir John Stirling Maxwell succeeded his father when only eleven years of age. He was educated at Eton and later at Trinity College, Cambridge. Thereafter he took up a political career and for some years was Member of Parliament for one of the Glasgow divisions.

'Sir John early acquired an unusually thorough knowledge of afforestation and on giving up his work in Parliament he devoted much of his time and energy to the promotion of the planting and cultivation of woodlands in the Highlands of Scotland, where he had an estate at Corrour, and for a term of years he was Chairman of the Forestry Commission. This was one of the great contributions he made during his lifetime for the benefit of his country and its people.

'In other spheres—all closely akin however—Sir John's wide culture spread its pioneering influence and sought to guide those responsible for new housing and town planning in combining the necessities of housing with the amenities of well-laid-out roads, plantings of trees and gardens, and the preservation of existing beautiful things in buildings and surroundings. He gave his patronage and encouragement to the arts—in particular to architecture, painting, music and letters. In 1937 his well-informed and altogether delightful book, *Shrines and Homes of Scotland*, was published. It is now a well-known and much loved volume. Small wonder, then, that the Association for the Preservation of Rural Scotland received the active help and encouragement of Sir John, or that the foundations of The National Trust for Scotland were laid at meetings with his friends at Pollok House twenty-five years ago. For some years Sir John was Chairman of the Royal Fine Art Commission for Scotland and was one of the Trustees of the National Galleries of Scotland. He served also on the Scottish Ancient Monuments Board and had a long association with The Royal Glasgow Institute of the Fine Arts.

'Sir John Stirling Maxwell was closely associated with the restoration of Paisley Abbey Church and recently gave several stained glass windows to Glasgow Cathedral. Many honours came to him. In 1929 he became a Knight of the Most Noble Order of the Thistle. An LL.D. of three Scottish Universities, he was, besides being an Honorary Associate of the R.I.B.A., an Honorary Fellow of the R.I.A.S., an Honorary member of the R.S.A., the R.W.S. and the R.S.W.

'He was on countless occasions a most generous benefactor. His career is a long record of good works and devoted services for the public good. Since about 1940 he had been almost totally crippled, but despite this infirmity he maintained a close and influential contact with the many organisations in which he was interested.'

Harold Percy Reynolds Atchison [*Retd. A*] died on 27 December 1955, aged 66.

As an assistant to Messrs. Humphreys Ltd. of Knightsbridge Mr. Atchison worked on the Festival of Empire Exhibition at the Crystal Palace in 1911. He then spent periods with the L.C.C., working on schools, and in the Sheffield City Architect's office. During the First World War he served in the Artists' Rifles and later in the Royal Artillery. He was afterwards with the Ministry of Agriculture and Fisheries for two years, then went to the Dorset County Council, where he became Deputy County Architect. Between 1921 and 1923 he held various posts as assistant and also carried on a private practice. During this period he worked as assistant on the Australian Pavilion for the Wembley Exhibition. In 1923 he went to the National Provincial Bank Ltd., rising to the post of Assistant Architect. He retired in 1949.

Grahame Kenneth Porter, A.M.T.P.I. [*A*], died on 19 March at the early age of 33.

Mr. Porter was born at Bridgend, Glamorgan, and was educated at Monkton House School, Cardiff, from which he went to the Welsh School of Architecture. Here he gained eight major awards, including the Architectural Construction Prize, the Lord Mayor's Prize and the Batsford Prize for the History and Theory of Design.

In Liverpool University he entered the department of Civic Design. In 1948 he was awarded the Lord Fairhaven Prize which took him to the Royal Academy School of Architecture.

On leaving the Academy Mr. Porter went to the London County Council, where he was engaged on town planning. His health deteriorating, he went abroad for a time, returning to take an appointment with the British Transport Commission, which he held up to the time of his death.

John Stuart [*Retd. F*]. **Correction.** In the obituary of Mr. John Stuart published in the August JOURNAL we stated that Mr. Stuart was responsible for the County Hall, Chelmsford, in association with Mr. Vincent Harris [*F*]. Mr. Harris now tells us that this was incorrect. Mr. Harris's work was in connection with the Council Chamber only.

Members' Column

This column is reserved for notices of changes of address, partnerships vacant or wanted, practices for sale or wanted, office accommodation, and personal notices other than of posts wanted as salaried assistants for which the Institute's Employment Register is maintained.

APPOINTMENTS

Mr. E. H. Brown [*L*] has been appointed Architect to the Federal Government of Libya and his address is now P.O. Box 29, Tripoli, Libya, N. Africa.

Mr. Eric D. Colley [*A*] has relinquished his appointment with the Borough Architect's Department, Bolton, and has been appointed to the technical teaching staff of the Bolton Education Committee.

Mr. A. W. Elliott [*A*] has resigned from the post of Architect to the Newmarket R.D.C. and is now Schools Architect to the Borough of Oldham. His address is now 43 Kingsway, Alkrington, Middleton, nr. Manchester.

Mr. R. S. Harvey [*A*] has relinquished his appointment as Deputy Education Architect to the Belfast Education Authority to take up the post of Chief Staff Architect to British European Airways at Keyline House, Ruislip, Middx.

PRACTICES AND PARTNERSHIPS

Mr. Michael R. Blampied [*A*] and **Mr. R. A. Nigel Biggar** [*A*] have by mutual consent dissolved the partnership formerly carried on under the name of Blampied and Biggar. Mr. Biggar is taking into partnership **Mrs. Sylvia Elizabeth Biggar** [*A*] and will continue to practise at 33 Halkett Place, Jersey, C.I. (Jersey Central 600), under the name of **Nigel Biggar and Partners.** Mr. Blampied will practise from 3 Southampton Place, London, W.C.1 (CHAncery 3787) under the name of **Michael R. Blampied and Partners.** He will be pleased to receive trade catalogues, etc.

The partners in the firm of **H. Anthony Clark, F. C. Roberts and Partners,** namely **Mr. H. Anthony Clark** [*F*], **Mr. F. C. Roberts** [*F*] and **Mr. R. B. Heaton** [*A*] have entered into partnership with Mr. A. Spence Atkinson at Martin's Bank Building, Water Street, Liverpool 2, under the style of **Spence Atkinson, Anthony Clark and Partners.** The firm of H. Anthony Clark, F. C. Roberts and Partners will continue as before at 41 Regent Street, Wrexham.

Mr. Richard Ferguson [*A*] has begun practice at 124 London Road, Chelmsford, Essex (Chelmsford 51845), where he will be pleased to receive trade catalogues.

Mr. Edward Fincham, M.C. [*A*], has taken into partnership **Mr. Frank H. Saunders** [*A*]. The practice is being carried on at 9 Palmer's Avenue, Grays, Essex, under the title of **Edward Fincham and Saunders.**

Mr. P. Russell Gibbs [*A*] has opened a London office at 66 Victoria Street, London, S.W.1 (TATe Gallery 3616). The Huntingdon office will continue at 37 High Street, Huntingdon.

Mr. Maurice Hardstaff [*A*] has taken into partnership **Mr. Thomas L. Lilley** [*A*]. The practice will continue from 23A High Street, Hemel Hempstead, Herts, under the style of **Maurice Hardstaff and Thomas L. Lilley.**

Mr. J. S. Houghton [*L*] of Kimberley, 7 Havelock Place, Whitby, N. Yorks, has opened a branch office at St. George's House, Pickering, N. Yorks, and will be in attendance on Mondays, Thursdays and Fridays for the time being.

The London office of the firm of **Robert Matthew and Johnson-Marshall** has now been opened at 24 Park Square East, N.W.1. The Edinburgh office continues at 31 Regent Terrace, Edinburgh 7.

Mr. Oliver Evans Taylor [*A*] is continuing the practice of his late father, Mr. Philip Evans Palmer [*A*], at Colletts Alley, Middle Street, Horsham, Sussex (Horsham 3029).

Mr. P. C. Stagg [*A*] has begun practice at 29A High Street, Godalming, Surrey, where he will be pleased to receive trade catalogues, etc.

Mr. John J. Turner [*A*] has begun practice at Rumbold's Hill, Midhurst, Sussex, and will be pleased to receive trade catalogues.

Mr. C. G. Wills [*A*] and **Mr. T. H. Barrow,** M.C. [*A*], in practice as **F. J. Wills and Son,** have taken into partnership **Mr. J. V. Henry** [*A*]. The practice will continue under the name of F. J. Wills and Son at 199 Piccadilly, London, W.1.

CHANGES OF ADDRESS

Mr. John Amor [*A*] has changed his address to Ward House, Norwood End, Fyfield, Essex (Fyfield 287), and has moved his office to Central House, Ongar, Essex (Ongar 162), where he will be pleased to receive trade literature, etc.

Mr. Keith J. Barron [*A*] has changed his address to 'Tewins', Salisbury Avenue, Harpenden, Herts (Harpenden 5013).

The address of **Mr. Dennis R. Barrow** [*A*] is now c/o Architectural Division, Public Works Department, George Street, Perth, W. Australia.

The address of **Mr. E. H. Brown** [*L*] is now P.O. Box 29, Tripoli, Libya, N. Africa.

Mr. J. C. Clavering [*F*] has changed his address to 23 Moore Street, London, S.W.3 (KENsington 3349).

The address of **Mr. Barry C. Finch** [*A*] is now c/o Messrs. Stephenson & Turner, Architects, 6 Boulcott Terrace, Wellington, New Zealand.

Mr. Sydney Hardy [*A*] has changed his address to 'Gables', Horseman Lane, Copmanthorpe, nr. York.

Mr. Eric G. V. Hives [*L*] is moving his Reading office to 46 Queen's Road, Reading (Reading 55484/5), on 29 September.

Mr. R. Norman Jones [*A*] has moved his office to Sheffield Buildings, 89 Victoria Street, Liverpool 1 (CENtral 2122), where he will be pleased to receive trade catalogues, etc.

Mr. Clive Pascall [*F*] has changed his address to 24 Half Moon Street, London, W.1 (GROsvenor 7343).

Messrs. Field, Pethybridge and Partners [*A*] have changed their address to 4 Yeoman's Row, London, S.W.3 (KNIghtsbridge 4791), where they will be pleased to receive trade catalogues.

Mr. Edmund Reagle [*L*], Company Architect to Jax Stores Ltd., has transferred his offices to Universal House, 256/261 Tottenham Court Road, London, W.1, where he will be glad to receive trade catalogues, etc.

Mr. Kenneth P. Sargant [*A*] has moved his office to 39 Bell Street, Reigate, Surrey, and will be pleased to receive trade catalogues, technical literature, etc. The telephone number remains unchanged (Reigate 4727).

Mr. John Richard Schwerdt [*A*] has changed his address to 31 High Street, Lewes, Sussex.

Mr. S. G. Smith [*A*] has changed his address to Selley's Yard, Fore Street, Sidmouth, Devon.

It was stated in the May Members' Column that **Mr. G. M. Vickers** [*A*] had moved to 54 Bloomsbury Street, Bedford Square, W.C.1. Mr. Vickers did not in fact move to this address, but has now moved to 68 Gt. Russell Street, Bloomsbury Square, London, W.C.1.

Mr. H. Kenneth White [*A*] has now returned to the United States. His address is Evergreen, Colorado, U.S.A.

PRACTICES AND PARTNERSHIPS WANTED AND AVAILABLE

Architects with wide provincial interests, wishing to develop their London office, are anxious to contact young architect, resident and with some connections in London, with view to partnership. Box 52, c/o Secretary, R.I.B.A.

Associate (32), returning from overseas in September, seeks junior partnership or position leading thereto, preferably south or south-west England. School trained, good experience on varied contemporary work. Some capital available. Box 62, c/o Secretary, R.I.B.A.

Associate (39), twelve years' varied experience, seeks partnership or position leading thereto, south coast or west country. Some capital available. Box 65, c/o Secretary, R.I.B.A.

Fellow (35), at present running small but very busy office in general private practice, seeks situation leading to partnership with well-established office. Midland or Cotswold area preferred but not essential. Capital available. Box 66, c/o Secretary, R.I.B.A.

Associate, Dip.Arch., public school, contemporary outlook, at present senior assistant to private architect, requires similar position with view to partnership. West Riding of Yorkshire preferred but not essential. Car owner. Capital available. Box 67, c/o Secretary, R.I.B.A.

Owing to ill health Fellow must sell outright sound practice in west of England. Box 68, c/o Secretary, R.I.B.A.

Associate (35), university trained, experience of large contracts in good office, seeks partnership. Capital available. Box 70, c/o Secretary, R.I.B.A.

Associate (31), 14 years' varied experience, seeks junior partnership or position leading thereto. Some capital available. Box 71, c/o Secretary, R.I.B.A.

Associate, experienced, with modest capital, seeks proportional partnership in small but established practice, West Sussex area. Box 72, c/o Secretary, R.I.B.A.

Associate, B.Arch. (Hons.) (L'pool), 9 years' experience with borough, county and New Town, of catholic tastes, contemporary, classical and antiquarian, seeks post of interest and responsibility with possibility of partnership within daily reach of Reading. Limited capital available. Box 74, c/o Secretary, R.I.B.A.

Associate (39), with wide general experience in responsible positions, seeks partnership or position leading thereto in south, preferably the south-west. Capital available. Box 75, c/o Secretary, R.I.B.A.

Associate, at present official architect with wide administrative experience, seeks working partnership with established private architect or firm, preferably Edinburgh or west country. Other areas considered. Box 76, c/o Secretary, R.I.B.A.

Fellow at age of retirement would dispose of his well-established practice in East Anglia. Church and domestic. Box 77, c/o Secretary, R.I.B.A.

Fellow returning to England mid-July 1957 seeks association with either a large office with overseas commitments where wide experience of private practice in the Far East and tropical Africa would be of value or a developing country practice where a second partner would be welcome. Capital available. Box 78, c/o Secretary, R.I.B.A.

ACCOMMODATION

1800–2000 sq. ft. office space wanted early 1957 in West End, Marble Arch or Knightsbridge areas. Box 64, c/o Secretary, R.I.B.A.

Architect requires offices. 3–4 rooms. Willing if necessary to share with other professional man. Box 69, c/o Secretary, R.I.B.A.

Architect has self-contained two-roomed ground floor suite to let on lease, Gray's Inn district. Box 73, c/o Secretary, R.I.B.A.

INFORMATION WANTED

Mrs. Marianne Walter [*A*] of 11 Collegiate Crescent, Sheffield 10, would be very grateful to anyone who could give her any information about the two first women members of the R.I.B.A.—Ethel Mary Charles (1900) and Bessie Ada Charles (1900). Mrs. Walter would welcome details for use in an article and talk on 'The Contribution of Women in Architecture and Housing'.

The Royal Institute of British Architects, as a body, is not responsible for statements made or opinions expressed in the JOURNAL.